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SOME OBSERVATIONS ON MYOCARDIAL INFARCTION.

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IN previous papers (Lowe, 1939, 1940) I have discussed the significance of the anatomical subdivision of the musculature of the ventricles into separate groups as a key to the results of disease processes occurring in the myocardium or its arteries.

It is my purpose in this paper to extend these conclusions by a study of some further examples of myocardial scars which follow muscle distributions.

Method of Preparation.

The hearts were prepared for examination and the drawings constructed as described on previous occasions (Lowe, 1940). In all drawings of transverse sections the upper edge of the section is the anterior surface and the sections are in successive transverse planes from base to apex. On the sections the line "X—Y" indicates the plane of the accompanying longitudinal section. On these longitudinal sections are indicated in a similar manner the planes of the transverse sections.

The Specimens.[1]

In all these specimens there were pronounced atheromatous changes in all the coronary arteries.

[1] The terminology of the muscles is the same as that used on previous occasions.

Specimen Number 86.[1]

In specimen 86 pronounced thinning of the lateral wall of the left ventricle is present, extending from the base four-fifths of the way to the apex (Figure IA). In this thinned wall there is a laminar scar occupying nearly 50% of the thickness of the wall. It will be seen from the upper two drawings of Figure I that in this area the scar at its anterior and posterior ends divides into two laminæ, one subendocardial and the other deep in the muscle wall. Near the apex, where the thinning of the wall disappears, the scar tissue is patchily distributed over the inner half of the ventricular wall.

Specimen Number 88.

At the apex of the left ventricle of specimen 88 there is an aneurysmal bulging of its wall. From the sections of the heart (Figure II) this bulge is seen to come from the anterior aspect of the lower fourth of the anterior wall. The ventricular wall in this region is very thin. The thinning extends a short distance above the upper limit of the aneurysm.

On examination of the sections, a sheet of scar tissue is seen in the thinned wall of the left ventricle. The wall of the aneurysm is formed chiefly of scar tissue covered on the interior by thickened endocardium and on the exterior by a thin layer of muscle.

The extent of the scar is seen in the diagrams, which represent sections through the heart in the region of the aneurysm. The scar extends from almost the apex to the upper limit of the thinning of the ventricular wall (Figure IIA). It occupies the greater part of the thickness of the wall of the aneurysm, but in the upper part it is confined to the subendocardial regions on the anterior aspect of the left ventricle.

[1] The specimen numbers refer to hearts examined in this and other studies. No clinical notes are available for specimens 86 or 88.

Specimen Number 89.

In specimen 89 the wall of the left ventricle is thinned on the postero-medial and posterior aspects. The thin area extends from the base half the way to the apex (Figure IVA). In the thin wall there are two scars, one subendocardial and the other in the depths of the wall (Figure III). The subendocardial scar is seen only in the upper

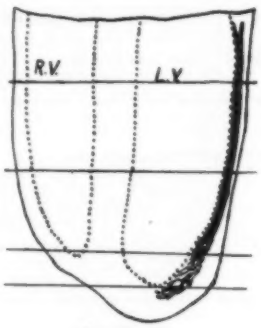


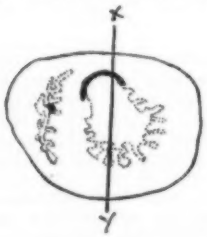
FIGURE I. FIGURE IA.

FIGURE I: Drawings of transverse sections of specimen 86, showing the positions of the scars at the levels indicated in Figure IA.

FIGURE IA: Drawing of a longitudinal section of specimen 86, showing the extent of the scars in the plane indicated in Figure I.

sections, occupying the position shown in the upper drawing (Figure IV). The deep scar extends from the base, where it involves the interventricular septum (lower drawing, Figure IV), to a point roughly half-way to the apex. In the thin area the two scars represent 50% of the thickness of the wall, but are separated from each other by a layer of muscle.

This specimen was obtained from a male, aged sixty years, who gave a



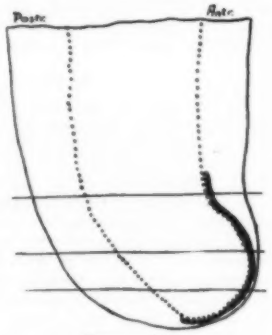
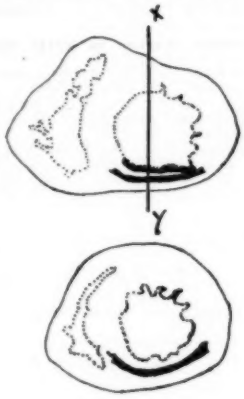


FIGURE II. FIGURE IIA.

FIGURE II: Drawings of transverse section of specimen 88, showing the position of the scar and the thinning of the ventricular wall in the planes indicated in Figure IIA.

FIGURE IIA: Drawing representing a longitudinal section of specimen 88, in the plane indicated in Figure II. This shows the longitudinal extent of the scar and the thinning of the ventricular wall.

history that he had been treated for a gastric ulcer three years previously and that his symptoms had gradually cleared completely. Twelve hours before his admission to hospital he had suddenly experienced severe pain in the left side of the chest, which had radiated down his left arm to the elbow. He felt faint and vomited several times. Examination on his admission to hospital revealed that his temperature was 98·2° F., his pulse rate was 120 per minute, the systolic blood pressure 90 millimetres of mercury and the diastolic 80. There was a little upper abdominal rigidity, but there were no other abnormal physical signs. His condition became steadily worse, the systolic blood



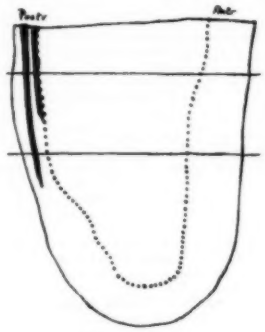


FIGURE IV. FIGURE IVA.

FIGURE IV: Drawings of transverse sections of specimen 89, showing the position of the scars and thinning of the ventricular wall at the levels indicated in Figure IA.

FIGURE IVA: Drawing representing a longitudinal section of specimen 89, showing the longitudinal extent of the scars and the thinning of the ventricular wall in the plane indicated in Figure IV.

pressure falling to 70 millimetres of mercury twelve hours later. He died seventy-two hours after the onset of pain. An electrocardiographic tracing was taken shortly after his admission to hospital and is shown in Figure V.

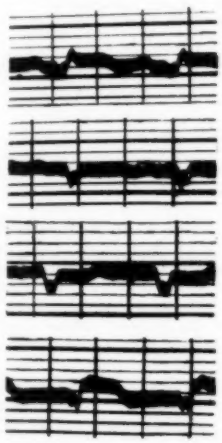


FIGURE V.

The electrocardiogram corresponding to specimen 89.

Specimen Number 90.

In the wall of the left ventricle in specimen 90, in the region of the postero-medial angle, thinning is present, extending from the base to a point approximately one-third of the way to the apex (Figure VIA). The lateral extent of this thinning is equivalent to one-sixth of the circumference. In the thin area there is a band of yellowish-white tissue one millimetre thick (Figure VI). It is separated from the endocardium by a layer of muscle one millimetre thick. The total thickness of the ventricular wall at this site is six millimetres, compared with a thickness of fifteen millimetres in other areas at this level.

In the line of the yellow tissue at its apical end there is a small abscess cavity three millimetres in diameter.

Microscopic section through the heart wall in the area of this yellow band shows it to be formed of dead muscle fibres (Figure VII). In all other parts of the muscle there is a pronounced infiltration of inflammatory cells (Figure VII) between the muscle fibres, but there is no such infiltration in the infarcted zone. The small abscess cavity is seen to be in the line of the infarct.

This specimen was obtained from a male, aged seventy-eight years, who three days before his admission to hospital experienced severe pain in the epigastrium and the

left hypochondrium with some vomiting. Physical examination revealed the following facts:

The temperature was 97° F. and the pulse rate 68 per minute. The systolic blood pressure was 70 millimetres of mercury and the diastolic 50. Numerous moist sounds were present all over the lungs. Two days later his temperature rose at night above the normal, and continued

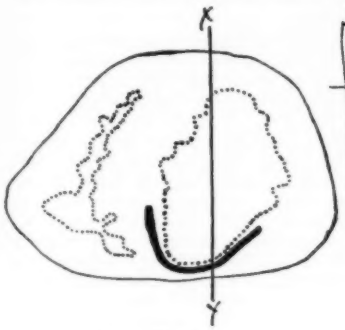


FIGURE VI.

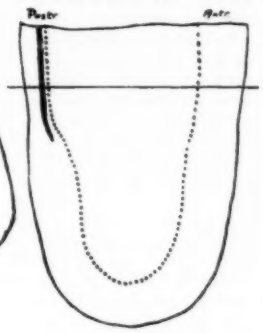


FIGURE VIA.

FIGURE VI: Drawings of transverse sections of specimen 90, showing the position of the scar and thinning of the ventricular wall at the level indicated in Figure VIA.

FIGURE VIA: Drawing of a longitudinal section of specimen 90, showing the longitudinal extent of the scar and the thinning of the ventricular wall in the plane indicated in Figure VI.

to rise at night. A rigor occurred on the tenth day of his illness. He died on the fourteenth day after the onset, probably from septicæmia.

An electrocardiogram taken on the fifth day of the illness is shown in Figure VIII.

Specimen Number 91.

Sections of the heart in specimen 91 reveal a band of yellowish tissue in the interventricular septum. It is in the septum reaching to the posterior, but not quite to the anterior end ("A", Figure IX, upper three drawings). It extends from a point about one-quarter of the way from the base to the apex to a point about three-quarters of the way from the base to the apex (Figure IXA). It is placed nearer the left than the right ventricle, and at its midpoint becomes almost subendocardial.

In the lower quarter of the ventricle (Figure IXA) there is another band of yellowish tissue ("B", Figure IX, lower two drawings), which is seen at the posterior end of the interventricular septum, spreading around the posterior surface of the left ventricle and confined to the endocardial half of the wall. There is some thinning of the ventricular wall in this region.

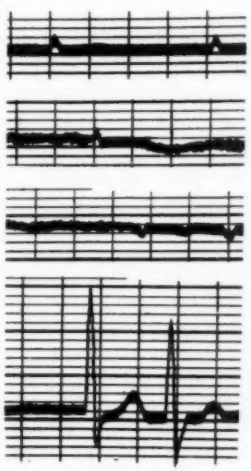


FIGURE VIII.

The electrocardiogram corresponding to specimen 90.

Microscopic sections show these two bands to be composed of young fibrous tissue with remnants of muscle fibres still showing, and to be both of approximately the same age (Figure X).

The specimen was obtained from a male, aged fifty-one years, who twenty-eight days before death was operated on for a supposedly perforated peptic ulcer. He had been treated for a peptic ulcer six years previously. The onset of the attack was a severe attack of epigastric pain associated with some vomiting. An electrocardiogram taken at this time is shown in Figure XI. The main physical signs were as follows: The temperature was 97·8° F., the pulse rate was 88 per minute, the systolic blood pressure was 110 millimetres of mercury and the diastolic 80. There was some upper abdominal rigidity. Laparotomy revealed the scar of an old duodenal ulcer, but no recent lesion. On the twenty-fourth day of the illness he complained of shortness of breath and

FIGURE IX.

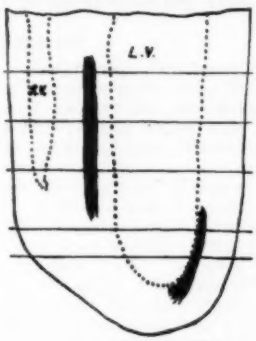


FIGURE IXA.

FIGURE IX: Drawings of transverse sections of specimen 91, showing the positions of the scars (*A* and *B*) at the levels indicated in Figure IXA.

FIGURE IXA: Drawing of a longitudinal section of specimen 91, showing the extent of the scars in the plane indicated in Figure IX.

nausea. At this time his temperature was 98° F., the pulse rate was 88 per minute, the systolic blood pressure was 120 millimetres of mercury and the diastolic 100. On the day before death his systolic blood pressure fell to 108 and his diastolic blood pressure to 90 millimetres of mercury. The electrocardiogram taken at this period is shown in Figure XIA. On the twenty-eighth day he died rapidly after vomiting once.

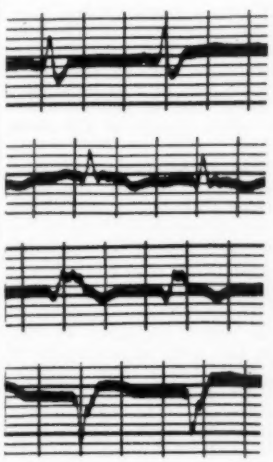


FIGURE XI.

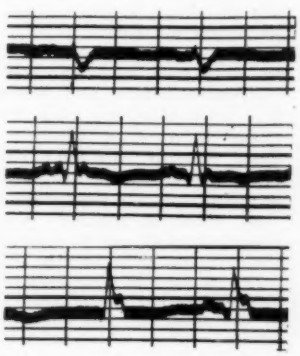


FIGURE XIA.

FIGURE XI: The electrocardiogram corresponding to specimen 91, taken on the first day of the illness.

FIGURE XIA: The electrocardiogram corresponding to specimen 91, taken on the twenty-seventh day of the illness.

At post-mortem examination the lungs were very congested and bilateral hydrothorax was present, which had probably contributed to the cardiac insufficiency developing on the twenty-fourth day. There was no general œdema. Death was probably due to a further coronary occlusion,

which, of course, would not be detectable *post mortem* so soon afterwards.

Specimen Number 28.

A description of the distribution of the infarct in specimen 28 was given in a previous paper (Lowe, 1939). Microscopic section (Figure XII) of the region of the infarct shows that the dead muscle tissues have been largely removed and replaced by a loose œdematous fibrous tissue having a much younger appearance than that seen in the sections of specimen 91. In this case the time of death after the occurrence of the infarction was twelve days.

Discussion.

In a previous paper it was shown that the position of the scars, seen in specimens similar to these, corresponds to portions of the various muscles which constitute the ventricular walls (Lowe, 1939). In the cases recorded here a similar correlation between scars and muscles can be seen.

The scars in specimen 86 result from the involvement of portions of two muscles. The subendocardial portion of the scar, extending to the apex of the ventricle, corresponds to the internal portion of the superficial bulbospiral muscle. The outer portion of the scar traced laterally separates from the endocardial part and runs in the depths of the muscle mass. It represents portion of one of the deep muscle bundles of the left ventricle. As it lies next to the subendocardial muscle (indicated in this instance by a scar) it will represent a portion of the deep bulbospiral muscle.

The scar in specimen 88 corresponds to the lower portion of the subendocardial part of the superficial sinospiral muscle. In the lowest parts of the ventricle the two superficial muscles wrap around each other as they pass from the external to the internal surfaces of the ventricles and form the whole thickness of the ventricular wall in that region. It will be expected therefore that an aneurysm in this region due to destruction of portion of the superficial sinospiral muscle will have a wall composed of a layer of scar covered externally by a stretched layer of muscle.

Of the scars in specimen 89 the subendocardial one corresponds to the upper part of the subendocardial section of the superficial bulbospiral muscle. The scar in the thickness of the wall corresponds to one of the deep muscle bundles of the left ventricle; but, as will be shown later, it is in a different layer from that in specimen 86, and so corresponds to either the scroll muscle or the deep sinospiral muscle.

In specimen 90 the recent infarct corresponds to one of the deep muscles of the left ventricle, probably the deep bulbospiral muscle, as it is separated from the endocardium by a layer of muscle only one millimetre thick.

The infarcts in specimen 91 correspond to muscles also. That at the apex corresponds to the endocardial portion of the superficial bulbospiral muscle and the other to portion of the deep bulbospiral muscle.

As there is amongst writers some variation in the descriptions of the fine detail of the deep musculature of the left ventricle (Flett, 1927, Robb, 1934), any observations on muscle distribution obtained from sources other than dissection are of especial interest. The main points of difference in the descriptions concern the number of separate layers which exist in the wall of the left ventricle near the base. All agree that the two superficial muscles form the external and internal surfaces of the left ventricle, and that the deep bulbospiral muscle is confined to the upper two-thirds of the left ventricular wall next to the subendocardial layer. In addition to these layers all writers agree that there is at least one more layer in the wall of the left ventricle. Some authors, however (Mall, 1910, Robb, 1934), have described two additional layers in this region. A comparison of the scars in specimens 86 and 89 shows clearly that there are at least two, and possibly three, layers of muscle in the wall of the left ventricle at this level between the internal and external parts of the superficial muscles. The scar in specimen 86 in the thickness of the wall is in contact with the subendocardial muscle (replaced by scar tissue), whilst that in specimen 89 is separated from the subendocardial muscle by a distinct muscle layer. It is probable, but not conclusively proved by specimen 89, that there is a third layer at this level, for the pericardial portion of the superficial muscle is thin in this region, and could not account for the thickness of muscle seen between the scar and the exterior.

It will be noticed that in all specimens there is thinning of the ventricular wall in the region of the scars; but only in specimen 88 is there aneurysm formation. This site is probably the commonest for the development of an aneurysm of the ventricle.

The development of an aneurysm of any hollow organ such as the ventricle or the aorta requires first of all some weakening of the wall of the viscus. In the case of the ventricles, the death of parts of muscle bundles will undoubtedly weaken the wall. The subsequent development of an aneurysm will depend on the amount of muscle left intact. At the apex of the ventricle the whole wall is formed by the two superficial muscles; destruction of the whole thickness of one of these will greatly weaken the wall, and so an aneurysm is likely to develop. Destruction of portion of the same muscle bundles at sites nearer the base will, however, not lead to aneurysm formation, for there are several other muscle layers to form the wall. Even at the apex it requires destruction of the whole thickness of one of the muscles to start an aneurysmal dilatation. On previous occasions I have recorded instances in which apical scars have not been associated with aneurysm formation. Specimen 91 illustrates this point; the basal infarct is associated with thinning of the ventricular wall, but no aneurysmal dilatation, whereas the apical infarct is associated with commencing aneurysmal dilatation. Aneurysm formation in the upper two-thirds of the ventricle, therefore, takes place only when several of the layers have been destroyed. In a similar way rupture of the heart in this region will not follow the involvement of a single layer, but will occur only when several of the layers have been destroyed. It seems open to doubt from the various specimens described, here and elsewhere, whether the destruction of a portion of a single muscle bundle anywhere in the heart will produce death, either from myocardial failure or from rupture. Death ensues from a combination of muscle lesions either together or in succession, or from the late consequences of aneurysm formation.

If there is any correlation between the changes in the electrical record and the site of the muscle lesion, the electrocardiograms obtained from the subjects from whom specimens 90 and 91 were taken are of considerable importance. In these two instances the disturbances in the curves are probably due to the lesion found *post mortem*. The patient from whom specimen 90 was taken died from septicæmia and not from further myocardial infarction; but the possibility of superadded changes from myocarditis cannot be assessed. The patient from whom specimen 91 was taken, however, had the two electrocardiograms taken between the first and the second infarctions as judged by the clinical history. The tracings therefore should correspond to the infarcts found *post mortem*. The second infarction, occurring so close to the patient's death, would not be visible at post-mortem examination. It is unlikely that the electrocardiogram of the patient who provided specimen 89 can be correlated with the scar described, for that is an old lesion and the tracing is disturbed by a recent lesion.

The record associated with specimen 90 shows a very low voltage in leads I, II and III, and correlation with the lesion appears impossible.

The two records associated with specimen 91 both show the same distortion—a high take-off of the *R-T* segment in lead III and a slight depression of the *R-T* segment in lead I (this latter has disappeared in the second tracing). According to Robb (1939) this should indicate a lesion in both the superficial bulbospiral and the deep bulbospiral muscles. This agrees with the infarcts described.

The record associated with specimen 29 (Lowe, 1939) shows a distortion corresponding to a lesion in the deep sinospiral muscle, in which a recent infarct was present.

From a study of the microscopic sections from specimens 90, 91 and 28, an estimate of the rate of removal of dead muscle and its replacement with fibrous tissue can be made. This is a matter of importance from the point of view of treatment. The section of specimen 90 shows that after fourteen days there has been little removal of the dead tissue, whereas in specimen 91 twenty-eight days, and in specimen 28 twelve days, after infarction the dead tissue has been replaced by young fibrous tissue. It appears from these observations that there is some variation in the times taken for fibrous replacement of the dead muscle to occur, and the only conclusion to be drawn from these three specimens is that more than twenty-eight days are necessary for the scar to reach an adult condition.

Summary.

Descriptions of five new specimens of ventricular myocardial scars are presented. In all specimens thinning of the ventricular wall has occurred in the region of the scars. In one specimen there is aneurysm formation in the left ventricle.

Comparison of these specimens shows that there are probably three layers of muscle between the internal and the external portions of the superficial muscles in the upper portions of the left ventricle.

The importance of the site of muscle injury in relation to aneurysm formation is discussed.

On the basis of muscle bundles an exact correlation between the electrocardiogram and the sites of infarction is possible in one of the new cases.

The rate of replacement of dead muscle in an infarct by fibrous tissue is commented upon.

Acknowledgements.

I wish to thank Professor P. MacCallum for his advice and encouragement throughout these investigations.

My thanks are also due to Dr. W. G. D. Upjohn, Dr. F. D. Lawton and Dr. L. Hurley for permission to record the clinical notes of the patients who came into their care.

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THE EFFECT OF ŒSTROGENIC SUBSTANCES ON THE KIDNEY OF TRICHOSURUS VULPECULA.

By A. BOLLIGER and A. J. CANNY.

(From the Gordon Craig Research Laboratory, Department of Surgery and Department of Pathology, University of Sydney.)

SOME time ago it was observed that male phalangers or possums (*Trichosurus vulpecula*) invariably died with a greatly elevated blood urea content after the repeated administration of œstradiol benzoate in large doses.[1] Some of these animals survived for a few weeks while others lived considerably longer (up to four months). In the report on these findings, only a few experiments in which the animals lived for short periods were briefly mentioned, while those in which they survived for longer and in which obstruction in the lower part of the urinary tract usually developed were described in full. It was felt that the elevated blood urea values in the latter group could frequently be explained by the obstruction observed. In the meantime, further observations have been made, relating to both male and female animals which died or were killed soon after the injection of a variety of naturally occurring œstrogens (œstrone, œstradiol benzoate, œstradiol propionate) as well as synthetic œstrogens (stilbœstrol, hexœstrol).

Experimental Work.

Stilbœstrol.

First we shall deal with experiments with stilbœstrol, because this investigation was concerned primarily with the effects of this compound. Six possums of varying ages were injected with a single dose of two milligrammes of stilbœstrol propionate ("Stilbœstrol D.-P.", British Drug Houses) and one particularly small phalanger was injected with one milligramme.

Data relating to these animals are given in Table I. This group comprises seven apparently fully grown possums (four males and three females) which were in good condition before the injections were started and which in no case showed any evidence of senility. Of these, three were killed on the second, sixth and tenth day respectively, while the others died apparently from the effects of the injections. With the exception of the first animal, which was killed two days after the administration of the stilbœstrol, the blood of all had a definitely increased urea content. S55, which was an exceptionally large animal (dosage 0·78 milligramme per kilogram of body weight), had the smallest rise in blood urea content, while the smaller animal, S54 (dosage 0·98 milligramme per kilogram of body weight), which was also killed, had a blood urea content of 180 milligrammes *per centum*. The animals which were allowed to die had a higher blood urea content than those that were killed irrespective of the duration of the experiment. Determinations were performed of the blood calcium content of three animals which were killed; the values were found to be within normal limits.

In addition to the information given in Table I, urinary findings will now be mentioned. In all the cases listed casts were found in the urine. The urine of the animal S53 contained very few casts, while the urine of those surviving longer contained a great number of hyaline and some granular casts. In these latter cases the urine was of a pale colour and its urea content was persistently below normal, ranging from 1·0% to 2·0%.

In the animals with a high blood urea content a puffiness of the face and of the hindquarters was frequently seen, this being due to local œdema. However, in spite of such swellings these animals showed a pronounced loss of weight, which amounted to as much as a quarter of the original body weight.

Four phalangers were injected with free stilbœstrol in single or repeated doses ranging from 1·0 to 2·0 milligrammes. Symptoms probably due to renal damage such as polyuria and casts in the urine were observed. But none of these animals died or was killed, and no information about the state of their kidneys was obtained. Similar conditions were found after the administration of hexœstrol.

Morphological Findings.—The kidneys were of average size, and except for varying degrees of pallor and mottling they were normal in appearance. On microscopic examination varying degrees of cloudy swelling were noted, which in those animals which survived for longer than four days was associated with necrosis of the epithelium of the convoluted tubules. In almost all instances the collecting tubules were found to be dilated in their proximal portions. Sometimes vacuolization and swelling of the epithelium in the terminal portions of the collecting tubules were observed. In animals S52 and E1 calcification of the epithelial remnants of the convoluted tubules had occurred

TABLE I.
Experiments with Stilbœstrol Dipropionate.

Number of Animal.	Sex.	Body Weight at Death. (Kilograms.)	Amount Injected per Kilogram of Body Weight. (Milligrammes.)	Survival Period. (Days.)	Blood Urea Content at Death. (Milligrammes *Per Centum*.)	Blood Calcium Content at Death. (Milligrammes *Per Centum*.)	Calcium in Renal Parenchyma.	Remarks.
853	M.	1·93	1·04	2	42	10·4	0	Killed.
85	F.	1·55	1·29	4	186		0	Died.
854	M.	2·05	0·98	6	150	11·2	0	Killed.
852	M.	1·42	1·41	8	260		+ + +	Died.
855	M.	2·55	0·78	10	82	9·4	0	Killed.
S4	F.	1·7	1·18	15	540		0	Died.
E1	F.	1·1	0·91	17			+	Died.

(Figure I). We verified this by staining the histological sections with alizarin. In E1 the calcification was confined to several small areas, while in S52 extensive calcification of the degenerate epithelium of many of the convoluted tubules was seen. In S52 early calcification was also observed in the muscular coat of a few arcuate and interlobular blood vessels, although in other respects the vessel wall had a normal appearance (Figure II). No pronounced alterations in glomerular structure were seen; but in three animals (S4, S52, E1) the vascularity of the capillary tufts was diminished.

Œstradiol Benzoate and Œstradiol Dipropionate.

The experiments with œstradiol benzoate and œstradiol dipropionate were originally designed for studying the action of the œstrogens on the sex organs, such as the prostate, the testes, the pouch *et cetera*.[1][2][3] As pointed out before, animals receiving these compounds frequently died with symptoms of renal insufficiency within several weeks of the commencement of the experiment. This material has now been studied again with particular reference to the occurrence of renal damage; but care has been taken to exclude from this study animals with obvious urinary obstruction as indicated by hydroureter or hydronephrosis (Table II).

In contrast to the previous experiments with stilbœstrol dipropionate (Table I), in which only one injection was given, the group now under discussion (Table II) received repeated weekly doses till the animal was killed or died. As shown in Table II, the urea content of the blood was greatly elevated at the termination of each experiment. The lowest value was 133 milligrammes *per centum* in a male that was killed. In the animals which died the terminal blood urea content ranged from 197 to 800 milligrammes *per centum*. Urinary changes such as the presence of numerous casts and a low urea content were usually observed after the second week of the experiment.

Morphological Findings.—The findings were in many respects similar to those in the first group. However, cloudy swelling was on the whole less pronounced in the kidneys of animals which survived for four weeks or longer. Calcification of the tubular epithelium was much more frequent than in the first group and was observed in nine out of ten experiments (Figure III). But as in the previous group, the kidneys in which calcification was most extensive (65) had also some calcification in the muscular coat of their arcuate and interlobular vessels.

Discussion.

Recently the opinion has been expressed that œstrogens, when administered in large doses, may damage the kidney. Grollman, Harrison and Williams, who worked with rats, found that the administration of œstradiol and other sterol derivatives such as testosterone, progesterone and desoxycorticosterone as well as stilbœstrol, induced an elevation of blood pressure in some of the animals, and they suggested that this hypertensive effect was due to renal injury, since it could be abolished by the administration of renal extracts.[4]

Korenchevsky and Ross claim to have observed peculiar cyst-like degenerative changes in the kidneys of rats which had been injected with œstradiol esters.[5] They considered these cysts to be similar to those appearing in human kidneys affected by certain types of Bright's disease. These changes were observed after a very prolonged treatment (three and three-quarter months) with large weekly doses. The kidneys of rats injected for shorter periods comparable with those used in our experiments failed to exhibit pronounced changes. In some experiments with rats injected with œstrone, œstradiol benzoate or stilbœstrol for periods of one to eight weeks, we could find no definite pathological changes in the kidneys. Selye did not observe specific effects on the kidneys of rats and mice which had been injected with large doses of stilbœstrol, although damage was found in other organs.[6] It appears that no adequate functional or histological evidence has been advanced to prove that œstrogens have a direct specific injurious action on the renal parenchyma.

However, functional as well as histological evidence of renal damage could easily be obtained from the Australian phalanger, in which within a few days of the administration of œstrogens such as stilbœstrol, œstradiol benzoate or œstradiol dipropionate in large but reasonable doses there was a definite rise in the urea content of the

TABLE II.
Experiments with Œstradiol Esters.

Number of Animal.	Sex.	Body Weight at Death. (Kilograms.)	Weekly Injection.		Total Amount Injected.		Survival Period. (Days.)	Blood Urea Content at Death. (Milligrammes.)	Calcium in Renal Parenchyma.	Remarks.
			Œstradiol Dipropionate. (Milligrammes.)[1]	Œstradiol Benzoate. 10,000 I.U.[2]	Œstradiol Dipropionate. (Milligrammes.)[1]	Œstradiol Benzoate. 10,000 I.U.[2]				
18	F.	1·9	5		10		10	270	+	Died.
65	M.	2·2		5		15	13	372	+ + + +	Died.
46	F.			10		20	15		+	Killed.
17	F.	2·1	5		15		15	197	+ + +	Died.
51	M.	1·7		4·5		12	17	133	+	Killed.
57	M.	1·9		4·5		13·5	24	326	+	Died.
19	F.	2·1		5		30	36		0	Died.
20	F.	1·9		4	30	24	38	500	+	Killed.
21	F.	2·0	5				40	380	+	Died.
60	M.	1·25		5		45	65	800	+	Died.

[1] The œstradiol propionate used was obtained from Ciba ("Ovocyclin P.").
[2] The potency of the œstradiol benzoate used in these experiments ("Œstroform", British Drug Houses) is expressed in international benzoate units.

blood. In the majority of cases (whether the injections were single or repeated) the animals succumbed, and at death blood urea levels ranging from 180 to 800 milligrammes *per centum* were observed.

On histological examination of the kidneys varying degrees of tubular damage were noted. The most outstanding observation was calcification involving the epithelial remnants in either a few or many of the convoluted tubules. Calcification was found in the kidneys of about 30% of the animals which had one injection, while after repeated injections some calcification was observed in practically every specimen examined.

It may well be that the calcification is similar in nature to that observed in moderate degrees of mercury bichloride poisoning, in which the calcium salts are laid down in the remnants of severely damaged or necrotic epithelial cells. The calcification could then be regarded as an indicator of the sites in which severe toxic damage to the renal parenchyma had been produced. Outside these areas of maximum damage the tubular changes may seem inconspicuous because of rapid repair of the less affected structures. It is possible that after or during the administration of œstrogens repair may be accelerated by the effect on cell proliferation which some of these compounds are known to possess.

Elevated blood calcium values such as are observed in dogs after large doses of œstrogens would help to explain the rapidly occurring calcification seen in some of our experiments. However, we have failed to observe an increased calcium level of the blood in animals receiving œstrogen. So far only a small number of estimations have been made. In this connexion we may recall the attempts to correlate the nephropathies of pregnancy with the action of the œstrogens. Disregarding for the time being the merits or demerits of this theory, we may simply point out that in the marsupial *Trichosurus vulpecula* œstrogens given in reasonable doses produce severe tubular degeneration. Similar doses administered over similar periods to other mammals such as the rat did not produce appreciable damage.

Summary.

Renal damage was produced in *Trichosurus vulpecula*, the common Australian phalanger or possum, shortly after the injection of œstrogens (œstradiol benzoate, œstradiol dipropionate and stilbœstrol).

The urea content of the blood began to rise soon after the injection of a fairly large dose and in the experiments which terminated fatally severe urea retention was noted.

The histological changes observed in the kidneys consisted of cloudy swelling and necrosis of the tubular epithelium and calcification of the necrotic epithelium similar to that seen in mercuric bichloride poisoning.

Calcification was also occasionally seen in the muscular coat of arcuate and interlobular blood vessels.

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VESICAL EXCLUSION.

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VESICAL exclusion is carried out in surgery when a defect in the ureter, bladder or urethra occurs which cannot be remedied to allow the urine to drain normally. By this means, one aims at preserving renal function and if possible allowing some degree of comfort and cleanliness to the patient. Indications occur as a result of disease or damage to the ureters, bladder or urethra. In connexion with the ureter the pathological condition may be unilateral or bilateral, and may include tumours, stones impossible of removal, extensive ureteritis, and surgical or other trauma. In the case of the bladder and urethra, the clinical conditions include congenital anomalies, such as exstrophy and epispadias, interstitial cystitis, in either non-specific or tuberculous form, malignant disease of the bladder or prostate, and irreparable incontinence due either to lack of sphincteric control or to vesical fistulæ to the vagina or rectum or both.

In general three methods are available. The first is drainage of the kidney to the skin by nephrostomy or pyelostomy. This method is possibly the easiest and is the least satisfactory in a subjective sense to the patient. It is reserved for those unfortunates in whom insufficient ureter is available for the performance of ureterostomy, and results in an uncontrolled flow of urine in an area where its collection can never be satisfactory or comfortable. As a temporary measure nephrostomy is of great value in the treatment of a damaged and infected kidney, often allowing at a later date the completion of surgical procedures which would have been inadvisable at the beginning.

The second method is by drainage through the ureter to the skin, and may be in the form of a ureteral fistula or by ureterostomy when the cut lower end of the ureter is brought to the skin. This latter is obviously more satisfactory, and is the method of choice when sufficient length of ureter is available. A dilated, unhealthy ureter is more easily managed after ureterostomy than a normal one. The site of cutaneous implantation should be about one inch anterior to and one inch below the anterior superior iliac spine, or, if possible, a little medial to that, to allow a collecting device to lie on flat skin. The operation itself is not particularly shock-producing, nor is it generally beset with any surgical difficulty if the ureteral condition allows of free mobilization.

The third method is that of uretero-intestinal implantation. It is much more difficult, the mortality rate is much higher, yet it would appear to be the most satisfactory from the point of view of the patient.

Coffey, of Oregon, began his experimental work in 1910, and ultimately described three techniques which all aimed at the establishment of a muscular valve to prevent reflux of the bowel contents to the kidney. Coffey's work was a most important contribution to the problems of uretero-intestinal anastomosis, and his influence is to be seen in all the work done today.

I believe the most important recent modification to be that of making the anastomosis extraperitoneal, and I was privileged to see James Priestly perform this operation at the Mayo Clinic in 1939.

I have deemed it advisable to practise vesical exclusion in several cases in recent years.

Reports of Cases.

M.M., a male patient, aged eighteen years, was comatose when I saw him on February 11, 1937. Most of his life he had had great difficulty in urination and was undoubtedly suffering from congenital bladder neck obstruction. Trans-urethral resection allowed him to pass urine freely, and he was relatively well until June, 1938, when he had several attacks of ureteral obstruction owing to the kinking of the left ureter, which was very dilated. The right kidney had ceased to function. The left pyeloureterogram (Figure I) showed that ureteral catheterizations could not be relied upon to relieve obstructions. On August 8, 1938, I per-

formed left cutaneous ureterostomy. The patient at the age of twenty-two years plays a little golf and drives a motor car, and although he only fills the role of spectator in many things, the operation would appear to have been justified.

W.A., a male patient, aged twenty years, in 1928 sustained a fracture involving the first and second lumbar vertebræ. This resulted in some loss of bowel control, which was inconvenient rather than painful; but it also resulted in loss of bladder function, resulting in incontinence, painful and spasmodic emptying and meatal stricture, on account of gross scarring of the *glans penis* following trophic disturbances. I performed bilateral cutaneous ureterostomy in April, 1938, which has relieved the former urinary troubles (Figure II).

FIGURE II.

W.K., a male patient, aged forty-four years, has had many surgical adventures. His right kidney has been functionless for some years. Stones were removed from the left kidney in February, 1936, and a stone was removed from the lower left ureter in May, 1938; much local sepsis resulted. I failed to remove a stone from the same position in November, 1938, and when calculous anuria supervened a month later, was compelled to create a ureteral fistula. The patient is now relatively well.

C.F., a male patient, aged forty-nine years, was treated by diathermy for a papillary growth involving the left ureteral orifice for about twelve months without cure. An excretion urogram on November 29, 1939, showed the left kidney to be functionless. I transplanted the right ureter to the sigmoid, and a urogram one month later showed the kidney to be working well. Unfortunately the patient died of pericarditis four months after operation. *Post mortem* the right kidney appeared to have suffered very little.

Uretero-intestinal implantation or anastomosis was formerly attended by a high mortality rate on account of the risk of peritonitis; but this danger has been largely eliminated. In cases of exstrophy of the bladder, the recent tendency is to operate earlier than formerly, and in support of this, Higgins, of the Cleveland Clinic, in April, 1939, reported a series of seven patients all under one year of age without a death. When the ureters are normal and the bowel function is not interfered with, a good result may be expected. Four to six hours' retention of urine (which means that the patient will need to pass urine once at night) with discrimination between solid and fluid bowel contents can be anticipated. Examples of twenty-five, twenty-four and twenty-two years of post-operative life have been cited in the 1939 "Year Book of Urology".

P.O'N., a male patient, aged fifty-six years, was first seen by me on February 8, 1940, at Sydney Hospital, with a complaint of hæmaturia of four days' duration. He had had one similar attack twelve months before. Cystoscopic examination on February 27, 1940, revealed extensive carcinoma involving the left base and lateral wall of the bladder. Operation was advised, but was postponed by the patient.

He returned on July 18, 1940, looking very ill and anæmic, and reported having passed much blood in his urine and having lost a considerable amount from a blow on the nose in a fight. He was admitted to the Mater Misericordiæ Public Hospital on July 20, 1940. His urine contained a large quantity of blood. On July 22, 1940, his blood urea content was 24 milligrammes per 100 cubic centimetres. A blood count revealed that the red cells numbered 1,460,000 and the white cells 10,800 per cubic millimetre; the hæmoglobin value was 21% and the colour index was 0·75.

Cystoscopy on July 23, 1940, was unsatisfactory, owing to the presence of much blood clot, and an attempt to control the blood loss by diathermy of the growth a few days later achieved nothing.

On July 24, 1940, a transfusion of 600 cubic centimetres of whole blood was given by Dr. Ryan. For four days prior to operation a non-residue diet with free fluids was taken. Two days before operation salts were given in the early morning and an enema was given in the evening. The night before operation the bowel was washed out.

On August 2, 1940, I transplanted the right ureter to the sigmoid. The lower end of the ureter was approached extraperitoneally through a low oblique incision. It was divided as close to the bladder as possible between double ligatures. The adjacent peritoneum was opened by an incision about three inches in extent, and the sigmoid colon was identified. The free margin of the bowel was drawn through this peritoneal opening, and by suturing the cut edges to either side of the bowel wall I was able to render the area for ureteral anastomosis extraperitoneal. The anastomosis was performed by the Coffee method, with the modification that a small rubber catheter with multiple perforations was pushed up the ureter for about three inches.

The catheter was prepared by burning many holes through the part to rest in the ureter by a red hot needle and by splitting the remainder, which rested in the bowel, so that it would not be obstructed by kinking. A soft rubber tube was stitched in the rectum and left for six days.

A further transfusion of 600 cubic centimetres of blood was given a few hours after the operation. Post-operatively nothing but water was allowed by mouth for forty-eight hours, and the fluid balance was maintained by the intravenous administration of glucose and saline solution.

The advantages of this operation are obvious. It is not productive of surgical shock, and in this particular case, when low spinal anæsthesia was used, the blood pressure at the beginning was 120 millimetres of mercury systolic and 75 diastolic and the pulse rate 92 per minute; sixty-five minutes later, at the finish, the blood pressure was 115 millimetres of mercury systolic and 65 diastolic and the pulse rate 86 per minute. The risk of peritonitis is minimal, and quite important is the fact that one or both ureters may be transplanted, according to the patient's condition, as the approaches are separate.

On August 23, 1940, a blood count revealed that the red cells numbered 1,500,000 and the white cells 9,200 per cubic millimetre; the hæmoglobin value was 15% and the colour index was 0·5. On September 7, 1940, the respective figures were 2,260,000 and 5,200 per cubic millimetre, 35% and 0·75.

After the first operation the degree of hæmaturia diminished, possibly because of the diminished function of the bladder. The left ureter was transplanted on September 13, 1940. The operation occupied less than an hour, the blood pressure at the beginning being 120 millimetres of mercury systolic and 70 diastolic, and the pulse rate 100 per minute; at the end of the operation the systolic blood pressure was 130 millimetres of mercury and the diastolic 70, and the pulse rate 80 per minute. The complete diversion of urine did not upset the patient, and the non-use of his bladder resulted in complete cessation of bleeding, with great improvement in his general condition.

On October 1, 1940, a blood count gave the following information: the red cells numbered 2,190,000 and the white cells 9,600 per cubic millimetre; the hæmoglobin value was 41% and the colour index 0·97. A transfusion of 600 cubic centimetres of blood was given on October 17, 1940. One week later a cystographic examination was made (Figure III).

I performed total cystectomy, prostatectomy and vesiculectomy on October 18, 1940. Dr. Maloney administered a spinal anæsthetic and I was assisted by Dr. Telfer and Dr. Ryan. The operation occupied two hours and five minutes; the blood pressure at the beginning was 125 millimetres of mercury systolic and 85 millimetres diastolic; at the conclusion of the operation the systolic blood pressure was 60 millimetres of mercury and the diastolic 40.

Though a mid-line suprapubic incision the bladder was freed on the upper aspect until the vesicles were exposed.

The peritoneum was deliberately opened for the dissection and closed when the peritoneal aspect was entirely free. Next, the bladder was freed laterally and anteriorly until the urethra could be encircled by one finger.

At this stage the patient was placed in the lithotomy position and the urethra, prostate and bladder neck were exposed. The urethra was divided between ligatures distal to the prostate. The latter organ was then dissected off the rectum, and this dissection continued towards the vesicles until the whole mass was completely free. The area was drained suprapubically and perineally. One litre of glucose and saline solution was given intravenously at the conclusion of the operation. The specimen is shown in Figure IV.

FIGURE IV.

My very limited experience would lead me to think that the perineal section of the operation should be completed first. I believe the prostate, bladder neck and bladder base, including the vesicles, should be freed completely. This would result in added mobility of the bladder and would facilitate its separation and the control of hæmorrhage in the deeper parts of the suprapubic dissection.

On October 22, 1940, a blood count gave the following information: the red cells numbered 2,580,000 and the white cells 8,200 per cubic millimetre; the hæmoglobin value was 44% and the colour index 0·88. The patient was discharged from hospital on November 16, 1940.

On January 17, 1941, three months after operation, he had gained nine pounds in weight and weighed nine stone eleven pounds. He stated that he felt very well, was able to hold urine for about four hours and passed a formed stool each day.

Discussion.

I feel that in the five cases considered in this paper no measure but vesical exclusion would have been satisfactory. One never anticipates a result that provides a normal measure of comfort; but the alternative—doing nothing—means death in a short time. Some malignant growths of the bladder may be cured without excision, but they are few and far between.

Acknowledgements.

The successful result in the last case was made possible only by the skilled supervision of the patient by Dr. W. Ryan and the excellent nursing attention given by the staff of Boland Ward at the Mater Misericordiæ Hospital.

Summary.

1. The indications for vesical exclusion are mentioned.
2. Four cases in which the measure was adopted are briefly described.
3. One case of vesical carcinoma, in which diversion of the urinary stream to the sigmoid was carried out and followed by total cystectomy, is described in more detail.
4. A plea is made for more general use of the principle of vesical exclusion when relief or cure is otherwise impossible.

Reports of Cases.

A CASE OF CHRONIC GOUT WITH ANÆMIA.

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AT the present day gout is becoming a rare disease, and although among the well-to-do it is more frequent than is generally supposed, it is comparatively rarely met with in hospital practice.

For various reasons it appears of interest to report the present case. The first of these is the very striking picture presented by the unusually large and widely distributed uratic deposits; the second is that the post-mortem findings in such well-developed cases have not been published in this country and are for the most part to be found only in the older literature on gout.

The case possesses a further interest, in that in a recent number of this journal[1] we have described a case of juvenile tophaceous gout in a patient suffering from chronic erythronoclastic anæmia who had never taken alcohol in his life. The present patient also had anæmia; but the gout was evidently the primary condition, and the patient presented a typical history of chronic alcoholism. The type of anæmia and the changes in the spleen and bone marrow may be contrasted with those met with in the case of juvenile gout to which reference has been made.

As the question of the composition of tophi and tissues in gout had been raised in connexion with the above-mentioned case of juvenile gout, advantage was taken of the opportunity of carrying out analyses on the post-mortem material obtained in this case. The results of these analyses together with those carried out on tophi from other patients will be presented in a separate paper.

Clinical Record.

(C. G. Lambie.)

H.N., a male patient, aged fifty-nine years, was admitted to the Royal Prince Alfred Hospital on November 20, 1938, with signs of profound anæmia and presenting swellings in the neighbourhood of the joints, the buttocks and the helices of the ears.

He had suffered from attacks of pain in the joints since the age of thirty-one years. The first of these attacks occurred in 1915 and affected the metacarpo-phalangeal joints of the great toes, which became swollen and red, the condition subsiding in about ten weeks. He then remained well for a period of six years, after which he began to suffer from attacks of pain, swelling and stiffness in the fingers, wrists and elbow and shoulder joints, the toes being unaffected. Severe attacks of pain occurred at intervals of a few years, but between attacks the joints remained stiff and slightly painful.

In 1928 the patient noticed the appearance of small lumps on the back of the left hand. Since then lumps have appeared in the vicinity of the finger joints, wrists, elbows, knees, shins, feet and ears. Occasionally these lumps became red, swollen and painful. One on the middle finger of the right hand discharged "chalk" for two years. In September, 1933, a tophus at the base of the right great toe broke down

after an inflammatory attack and discharged a "chalk stone". The broken down tophus became infected, and on account of the resulting cellulitis the patient had to be admitted to the Royal Prince Alfred Hospital, where he was under the care of Dr. (now Sir) Charles Blackburn. At this time, in addition to tophi around joints, swellings were observed in the subcutaneous tissues of the arms, forearms and legs, while the affected joints were found to be in varying degrees of ankylosis, the hips, knees and elbows being more or less fixed in a flexed position.

A blood count made on September 10, 1933, revealed the presence of slight anæmia, hypochromic in type, and leucocytosis. The red blood corpuscles numbered 4,510,000 per cubic millimetre, the hæmoglobin value was 60% and the colour index was 0·66. The leucocytes numbered 12,100 per cubic millimetre; 78% were neutrophile cells, 16% lymphocytes, 3·5% monocytes, 1% eosinophile cells and 1·5% basophile cells. The blood contained 5·3 milligrammes of uric acid per 100 cubic centimetres.

In 1936 the patient began to complain of weakness, palpitation and breathlessness, and he noticed that he was growing paler. From that time on he was bedridden.

There was nothing of importance to note as regards his previous health.

There was no clear history of gout affecting any of the patient's blood relatives; but his mother suffered from hypertension and "rheumatic" pains in the ankles, while one sister suffers from swollen painful knees.

Formerly the patient drank a great deal of beer and schnapps. There was no evidence of exposure to lead.

On examination the patient was seen to be a rather stout man who looked much older than his actual age. He was extremely pale. He was propped up in bed with his arms flexed across the chest and his knees bent. Tophi were seen in the lobes of the ears. Very large swellings were present on both hands (Figure I), wrists (Figure II),

FIGURE I.

elbows, buttocks, knees (Figure III), shins (Figure III) and feet (Figure IV). Some of the swellings on the hands and the feet were fully two inches in diameter, while those on the buttocks were about six inches by three inches in diameter and discharged a putty-like material. A tophus on the left foot was also discharging. Most of the tophi occurred in the neighbourhood of joints or tendons. The deposits in the gluteal region possibly arose in one or other of the many bursæ in this region. The subcutaneous tissue of some of the fingers and toes was so infiltrated that the parts were about twice their normal diameter. The skin over most of the tophi was smooth and atrophic. On palpation many of the tophi were quite hard, but others were fluctuating and some were tender. The hip and elbow joints were fixed in the flexed position.

The temperature was 102° F. and the pulse rate 100 per minute. The vessels were thickened and tortuous. The heart was enlarged and systolic murmurs were heard both at the apex and at the base. The percussion note at the bases of the lungs was somewhat impaired, and a few crepitant râles were heard. The blood pressure was low (maximum 85 millimetres of mercury, minimum 50).

FIGURE II.

The liver was slightly enlarged, the lower border being two inches below the costal margin, external to the rectus muscle.

The spleen was not palpable, nor were any enlarged glands to be felt. The ocular fundi were very pale but otherwise normal in appearance. The urine contained no abnormal constituents.

A blood examination was made. The red cells numbered 1,890,000 per cubic millimetre and the hæmoglobin value was 2·4 grammes, or 16%; the colour index was 0·44. Considerable anisocytosis and poikilocytosis were present, and central pallor was very pronounced; slight polychromasia was noted. There was one nucleated red cell to every 200 leucocytes, and pronounced microcytosis was present. The white cells numbered 10,650 per cubic millimetre; 74% were neutrophile cells, 12·5% lymphocytes, 11·5% monocytes, 0·5% eosinophile cells and 0·5% basophile cells. The uric acid content of the blood was 8·8 milligrammes per 100 cubic centimetres, and the urea content 67 milligrammes per 100 cubic centimetres. The creatinine content was 2·6 millimetres per 100 cubic centimetres.

X-ray photographs revealed disorganization of both knee joints with masses of bone formation, presenting an appearance reminiscent of that seen in Charcot's joints. A similar condition was seen in many of the joints of the patient's right hand. Calcified masses were also seen in the gluteal region.

ILLUSTRATIONS TO THE ARTICLE BY DR. T. E. LOWE.

FIGURE III.

Photograph of a section of specimen 89, showing the scars and the thinning of the ventricular wall.

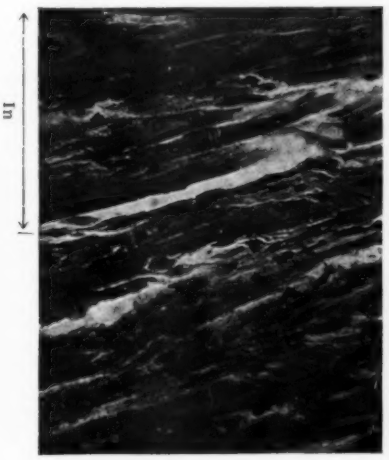

FIGURE VII.

Photomicrograph of cardiac wall, showing the infarcted area (In) alongside the non-infarcted muscle. Note the absence of inflammatory cells between the muscle cells in the infarcted area as compared with the remainder of the tissue. (High power, hæmatoxylin and eosin stain.)

FIGURE X.

Photomicrograph of the scar area in specimen 91. The muscle tissue has been replaced by a young fibrous tissue. (High power, hæmatoxylin and eosin stain.)

FIGURE XII.

Photomicrograph of the scar area in specimen 28, showing the muscle tissue replaced by young œdematous fibrous tissue. (High power, hæmatoxylin and eosin stain.)

ILLUSTRATIONS TO THE ARTICLE BY DR. A. BOLLIGER AND DR. A. J. CANNY.

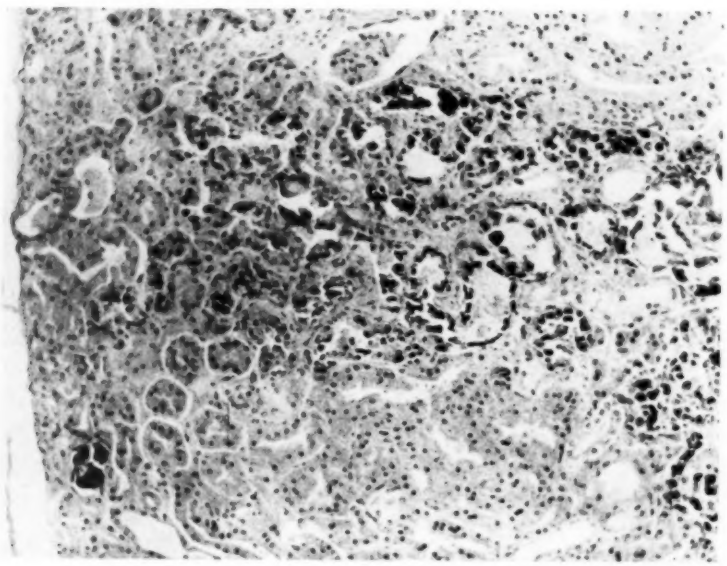

FIGURE I.

852. Section showing necrosis and calcification of the epithelium of the convoluted tubules eight days after a single injection of two milligrammes of stilbœstrol dipropionate. (Stain: H. and E.)

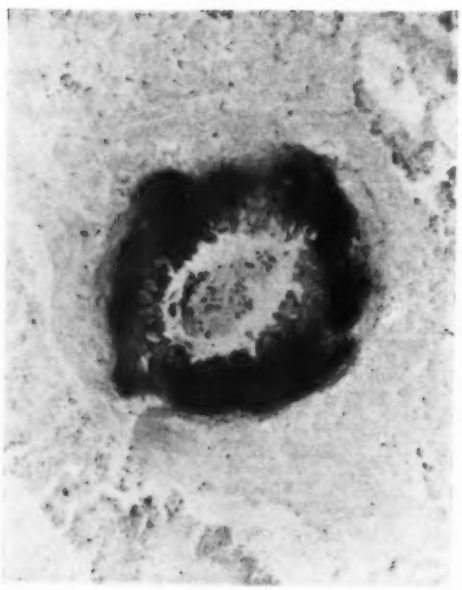

FIGURE II.

Section showing calcium deposits in the muscular coat of an artery. (Stain: alizarin.)

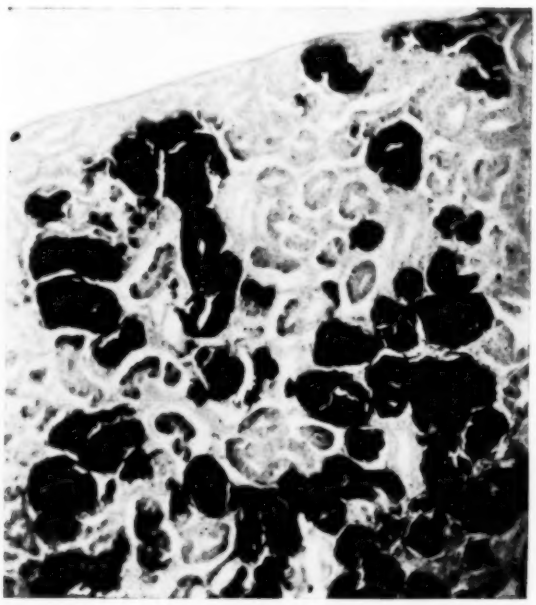

FIGURE III.

Experiment number 65. Section showing severe tubular calcification after two injections of œstradiol benzoate. The first injection was given thirteen days and the second six days before death. (Stain: alizarin.)

ILLUSTRATIONS TO THE ARTICLE BY Dr. KEITH KIRKLAND.

Figure I.

Figure III.

ILLUSTRATIONS TO THE ARTICLE BY Dr. C. G. LAMBIE AND Dr. C. S. DAVIES.

Figure V.

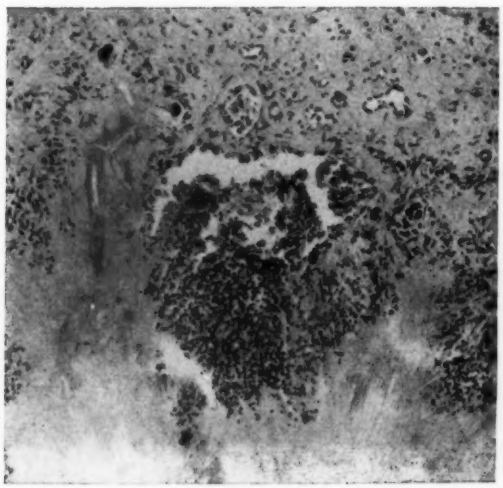

Figure VI.

ILLUSTRATIONS TO THE ARTICLE BY DR. K. R. SPEEDING.

FIGURE I.

FIGURE II.

FIGURE III.

Figure IV.

FIGURE V.

Autopsy Findings.

(G. F. S. Davies.)

The body was slightly obese. There were small tophi on the helices of the ears. The left hip joint was fixed in a flexed position. Around the joints, particularly those of the hands and feet, there were numerous tophi varying in size up to two inches in diameter. The skin over some of these was atrophic, but over others it was of normal thickness. On the lateral aspect of the left foot the skin covering a tophus had ulcerated and putty-like material could be expressed. On incision some of the tophi were found to be subcutaneous; but some in the hands and wrists were seen

FIGURE III.

in the tendons and capsules of the joints. On removal of the fifth finger of the left hand the capsule of the metacarpophalangeal joint was seen to be infiltrated by opaque putty-coloured material. This was also present in the periarticular tissues and in the articular cartilages. There was similar infiltration in the articular cartilage of the head of the left femur (Figure V) and in the synovial membrane of the left hip joint. A bursa above the *trochanter major* contained putty-like material. The sterno-clavicular joints were seen to be much enlarged, especially when viewed from behind.

Slight pulmonary emphysema was present. The heart weighed 550 grammes. The right ventricle was hypertrophied and slightly dilated, the muscle pale and soft. The left ventricle was hypertrophied and dilated, the aortic valve segments were slightly thickened and the aorta was atheromatous. The spleen was large and soft, and weighed 560 grammes. On section gross loss of structure was obvious. The liver exhibited chronic passive venous congestion.

The right kidney weighed 260 grammes. The capsule was adherent, the surface granular and lumpy, with some minute yellowish adenomata. The cortex was not narrowed, but was not well defined, and radial markings were indistinct. The pyramids, which were paler than usual, were encrusted with pale opaque material, which was seen as linear markings following the natural markings of the part. This was most pronounced at the apex of the pyramids. The left kidney was smaller than the right and the cortex was narrowed. It weighed 160 grammes.

The bone marrow in the shaft of the left femur was red, but that in the vertebral bodies was paler than normal.

Histological Examination.

In a section of a pyramid of a kidney abundant œdematous stroma is seen, in which there are large and small collections of foreign material. In one of the larger collections the material is pale and eosinophilic, with minute clefts which are partly radial and partly fan-shaped (Figure VI). There is an irregular cavity in the centre and at the margin there are small fibroblasts, radially arranged. Round a still larger collection of eosinophilic material there is a zone of nuclear débris; but radially arranged fibroblasts, without nuclear débris, are found at one end and are associated with an occasional foreign body giant cell. The smaller collections contain larger clefts, and the material remaining between these is pigmented and of a greenish-brown colour. Fibroblasts round these have not a definite radial arrangement, and foreign body giant cells are more numerous. A few very small particles of pigmented material are almost completely surrounded by foreign body giant cells. In the centre some ischæmic atrophy and fibrosis with clusters of hyaline glomeruli are to be seen. In other parts glomeruli appear normal, though there is some spoiling of convoluted tubules. There is a small papillary adenoma composed of small dark-staining cells. The arterioles are thick-walled.

Clustered around the outer margin of the cartilage of the helix of the ear are numerous large masses of eosinophilic material. These are almost acellular and slightly foamy in the centre; but the marginal portions contain small hyperchromatic spindle-shaped cells. The masses are separated by dense fibrous tissue, in which are similar hyperchromatic cells, some of which are large and multinucleated. On close examination with reduced illumination the material is seen to be made up largely of needle-like particles. These are found mainly in the marginal portions, the central portions being more amorphous and slightly more deeply eosinophilic.

The bone marrow of the vertebral body contains many small clumps of eosinophilic material, which in most parts is amorphous, but in some areas has a fine grain as though formed of needle-like crystals. Many of these masses are embedded in fatty tissue, being surrounded only by a thin fibrous zone in which are large multinucleated giant cells. In other parts they are embedded in dense fibrous tissue containing similar giant cells which resemble osteoclasts.

FIGURE IV.

In the section from the heart (left ventricle) there is a small collection of amorphous eosinophilic material with a slightly foamy but not crystalline structure. It contains a few nuclei. When this is traced to one side it becomes narrow and finally continuous with a muscle fibre. The remainder of the heart shows little abnormality apart from some perivascular fatty infiltration.

In the liver there is evidence of chronic passive venous congestion.

Reference.

(1) C. G. Lamble: "A Study of Juvenile Gout in a Patient Suffering from Chronic Erythronoclastic Anæmia of Obscure Origin. Together with Observations upon the Physical State of Uric Acid in the Blood and the Effects of Splenectomy", THE MEDICAL JOURNAL OF AUSTRALIA, April 20, 1940, page 535.

SHORT-WAVE THERAPY IN CHRONIC ARTHRITIS.

By K. R. SPEEDING, M.B., B.S. (Melbourne), D.R. (Edinburgh),

Melbourne.

THE beneficial effects of short-wave therapy in a large proportion of the various localized abnormalities, such as antral disease, lumbago, sciatica, paronychia *et cetera*, are by this time quite well known. Not so widely recognized are the results in some cases of systemic disease accompanied by local manifestations, in which one or more of the deeper skeletal structures are affected. The accompanying case reports may therefore be of particular interest, since they deal with certain of the osseous and articular lesions occurring in chronic arthritis.

Case I: Rheumatoid Arthritis.

In the first X-ray film (Figure I), which was taken at the commencement of treatment, the knee showed evidence of the destruction usually associated with the intermediate stages of the rheumatoid condition. Bony ankylosis had not yet become established, so it was apparent that, if the process could be promptly checked, gross interference with function might be avoided. The second X-ray film (Figure II, taken after 37 applications) shows that several changes have occurred. There is, of course, further narrowing of the joint space; but this would be expected in most forms of arthritis, particularly when some cartilaginous destruction had already taken place before any treatment had commenced. Much more significant is the observation that the destroyed portions of the joint surfaces have, to some extent, regained their continuity of outline. Also an important feature of the film is the increase in the amount of calcium deposited in the bones. Improvement in the actual osseous structure is suggested by trabeculation in the femoral and tibial condyles and by the return toward normal density of the local areas of rarefaction present in the first film. (One of these areas is indicated by an arrow.)

Similar changes were present in the other knee, but the response here was equally satisfactory, and the patient soon noticed a decrease in pain and tenderness, while at the same time a progressive improvement in the gait could be observed.

Case II: Arthritis in the Upper Region of the Neck (Cervical Spondylitis).

Figure III was taken before treatment. Note the dense bone (the density is greater near the edges) in the position indicated by the single-headed arrow. Figure IV was taken after six applications extending over a period of two and a half weeks. Soon after the commencement of the course one of the sulphonamide preparations was given for ten days. It will be noticed that the dense appearance referred to in the description of Figure III is not now so pronounced, the opaque material being more uniformly distributed throughout the bone concerned (body of the atlas). However, from this film it was evident that the patient's condition was not yet quite normal; and as there were still some intermittent symptoms, short-wave therapy was continued, this time with the addition of vitamin B_1.

Figure V illustrates the condition present after the later series of applications. The bone indicated by the double-headed arrow is now of homogeneous appearance, and the right side of the body of the atlas, previously referred to, has lost its sharp point and is once more normal in outline. (This series consisted of four applications spread over a period of ten days.)

It is not considered that, in this situation, the slight and asymmetrical variation in width of the intervertebral space was of any significance, since similar alterations may occur in normal persons when the head is displaced to one side or the other.

Discussion.

Observation of this patient provides us with yet another example of the efficiency of small quantities of medicinal substances when their absorption is assisted by the circulatory stimulation resulting from short-wave therapy. The actual amounts used were as follows: sulphanilamide, one tablet (seven and a half grains) per day for a few days, two tablets per day for two days, three tablets per day for two days. Two tablets of vitamin B_1 were given per day for about ten days.

It may be pointed out that the small doses of sulphanilamide thus given were not productive of the air-hunger associated with the combination of sulphur and hæmoglobin. The quantity was sufficient, however, to produce the toxic symptoms (erythema, malaise *et cetera*) resulting from bacterial destruction and elimination of the septic focus whose presence had been suspected. Local symptoms soon completely disappeared and had not returned when the last report was obtained six months after treatment.

The technique adopted in the treatment of both patients was of standard condenser field type, in which the part to be treated occupied a position directly between the two electrodes. In none of the applications were very high intensities used, and the intervals were always of sufficient length to enable any reaction resulting from the previous application to subside.

The information obtained from the study of cases such as Case II will perhaps be especially valuable in consequence of the fact that large quantities of certain drugs, vaccines *et cetera* are not always available. Sometimes also the sensitivity of a patient may be such that only fractional doses are desirable, and in this class of case it will be found that the combined method provides a means whereby clinical effects can be greatly increased without the likelihood of overdose.

Notes on Books, Current Journals and New Appliances.

A BOOK ON TREATMENT FOR GENERAL PRACTITIONERS.

THE 1941 volume of "Modern Treatment in General Practice" is, like its predecessors, described as "A Year Book of Diagnosis and Treatment for the General Practitioner".[1] It is issued by *The Medical Press and Circular* and has been edited by Dr. C. P. G. Wakeley, editor of that journal. In previous years we have commended this year book to the attention of medical practitioners; this year's volume is possibly of greater value than those of preceding years because, in addition to articles on general medicine and surgery, there are eleven on special subjects in war medicine and surgery. In describing the scope of the book we propose to enumerate the latter group as being the more important. G. Grey Turner writes on war wounds of the solid abdominal viscera; W. Kelsey Fry writes on gunshot wounds of the abdomen; Surgeon Lieutenant-Commander H. R. Vickers writes on the treatment of war-time dermatoses; E. D. D. Davis writes on deafness due to gunfire; Hugh Blauvelt writes on the treatment of gas gangrene; A. H. Douthwaite writes on war nephritis; B. Parsons-Smith writes on the soldier's heart and its treatment; Surgeon Rear-Admiral Sir W. I. de C. Wheeler writes on wounds of the upper part of the thigh and buttock; L. H. Savin writes on eye injuries in warfare; E. R. P. Williams writes on gunshot wounds of the forearm; J. B. Oldham writes on war wounds of the fingers; A. Wallis Kendall writes on the treatment of war burns.

The thirty-one articles in the general section comprise diverse and interesting subjects, for example, hæmatemesis and its treatment, the treatment of renal calculi, headaches and their treatment, treatment of habitual constipation, injuries to the ankle, the modern treatment of septic conditions of the skin, the "tired heart", the treatment of depression, the modern treatment of bronchitis in childhood. To read one of these forty-three articles every day would not take long and would be useful to any practitioner.

[1] "Modern Treatment in General Practice, Year Book 1941", edited by C. P. G. Wakeley, C.B., DSc., F.R.C.S., F.R.S.E., F.A.C.S., F.R.A.C.S.; 1941. London: The Medical Press and Circular. Demy 8vo, pp. 341, with illustrations. Price: 12s. 6d. net.

The Medical Journal of Australia

SATURDAY, JUNE 7, 1941.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: Initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

LIABILITY OF MEDICAL MEN FOR MILITARY SERVICE.

A leading article published in this journal on May 3, 1941, contained a frank statement of the needs of the defence forces of the Commonwealth for medical officers both for service abroad and for home service. It was explained that medicine was not a reserved occupation in relation to service in the forces as a medical officer. At the request of the military authorities we now remind readers that under the authority of a proclamation issued on January 20, 1941, all male inhabitants of Australia who on December 13, 1940, were unmarried or widowers without children, and who were born between July 1, 1906, and June 30, 1921, are required to register with the area officer of the area in which they reside. This proclamation is applicable to medical practitioners. Practitioners so registered will be available to the Deputy Director of Medical Services for service as medical officers.

THE RHEUMATISM PROBLEM: A SEVENTH AMERICAN REVIEW.

IN August of last year in commending to readers of this journal a paper by Dr. H. Boyd Graham on rheumatic heart disease, we drew attention to the "Sixth Rheumatism Review" prepared by P. S. Hench and other members of the Editorial Committee of the American Rheumatism Association. The "Seventh Rheumatism Review" has now been published.[1] The co-authors with P. S. Hench are W. Bauer, M. H. Dawson, F. Hall, W. P. Holbrook, J. A. Key and C. McEwen. The real title of this annual review is "The Problem of Rheumatism and Arthritis"; it covers American and English literature on the subject, and this year deals with all that was published in 1939. References are made to 831 articles, and it would appear that little, if anything, of importance has been omitted. As was explained last year, the review is concerned not only with acute rheumatism and other rheumatic diseases, but also with arthritis due to gonorrhœa, syphilis, pneumococcal infection, metabolic and endocrine disturbances, and so on. Obviously this is such an important document that it should be in the hands of all who devote attention to rheumatism and arthritis. It is true that the most recent of the articles covered by the review is almost eighteen months old, but the virtue of the review lies in the fact that all contributions dealing with the several aspects of the subject (and they are many) are brought together and shown in their proper perspective. This is enhanced by the comments from the Editorial Committee that are interspersed at frequent intervals. For those who do not wish to cover the whole range of the report and to whom the journal containing it may not be available, we propose to consider some aspects of acute rheumatic disease that are discussed.

In regard to the incidence of rheumatic fever, we are reminded that juvenile rheumatic carditis is the commonest single cause of persistently irregular school attendance in London. It accounted for 26·7% of all children out of school for three months or longer in 1936. The public health authorities in London listed as rheumatic 22,800 children under fifteen years of age, or 2·6% of the total child population of 878,000. But the incidence of acute rheumatism is becoming less, for the incidence of rheumatic carditis reported by medical officers of schools fell from 2·0% in 1926 to 0·77% in 1937, and Glover has reported that the crude annual death rate in England from rheumatic fever and its sequelæ fell from 67 per million persons in 1901 to 22 in 1937. The incidence is also decreasing in the United States of America. Unfortunately, it is not possible to give figures for Australia. The latest volume of "The Official Year Book for the Commonwealth of Australia" states that in 1938 the number of deaths from acute rheumatism in all the States was 268. Figures are given for acute and chronic endocarditis, valvular heart disease, diseases of the myocardium and so on, but these will obviously include many cases in which rheumatic infection was not responsible, and there are no data from which comparisons with earlier years can be made. Studies made during the year have apparently thrown very little light on the predisposing factors governing incidence. It was reported that rheumatic fever was a very frequent disease in northern Italy, "especially in regions with a continental climate", that it was comparatively mild in Vancouver, that in Ceylon it resembled the disease as it occurred in temperate climates, and that it was the same in arctic Russia as in Leningrad. Studies on dampness in relation to rheumatism were inconclusive, some authors considering it a factor and others failing to find any correlation. The seasonal incidence of the disease was noted as in previous years, but the differences usually recognized between the seasonal curves for the United States of America and those for England were not reported. Emphasis has again been laid on the importance of social and hygienic factors, such as poor housing, inadequate or improper food and crowding. Bach, Hill, Preston and Thornton found that 20% of a group of rheumatic children in London came from "very poor" homes and that only 1·4% came from "very good" homes. They were, however, chary about drawing conclusions from their study because the families investigated did

[1] *Annals of Internal Medicine*, February and March, 1941.

not represent a true cross-section of the community. They thought that overcrowding did not add any greater risk. J. A. Glover, writing in *The Lancet*, expressed the opinion that the disease was twenty or thirty times more frequent among poor than among rich children. H. W. E. Jones and S. Taylor stated that the diet of most rheumatic children in London appeared to be adequate. In a Baltimore study of 96 rheumatic and 33 non-rheumatic children, a family history of rheumatic fever was obtained 3·7 times oftener among the rheumatic than among the non-rheumatic children. In regard to age it was found that the highest incidence of initial attacks occurred at the age periods of six, and eleven to thirteen years. Bach and his fellow workers hold that rheumatic fever is exceedingly rare in children under three years of age and that after the age of eleven years it diminishes until at fourteen the risk is about half that at five years. All the papers dealt with in this review were written in 1939; it will be interesting to see whether the altered war conditions of 1940, with changes in diet, air raid shelters and the transference of large numbers of children from urban to rural districts of England, will lead to any discoverable changes in the manifestations of the disease.

On the clinical side some important points have been emphasized. In the first place, it is most necessary to distinguish between carditis and inactive rheumatic heart disease. Taussig has stated that in children with inactive rheumatic valvular disease further cardiac enlargement does not occur once the heart is adjusted to new conditions imposed by valvular inefficiency; but it does take place when active carditis recurs. Formerly it was taught that "growing pains" indicated rheumatic fever; but this is not often the case, and in several articles pains of rheumatic have been differentiated from those of non-rheumatic origin. Non-rheumatic pains of children tend to come at the end of the day, occur in the muscles of the legs and thighs rather than in the joints, seldom involve the upper extremities and are not associated with other signs of rheumatic activity or with an abnormal erythrocyte sedimentation rate, leucocyte count or hæmoglobin value. In other words, as the editors of the report remark, they usually represent muscle fatigue from over-activity. J. C. Hawksley has shown that the subsequent incidence of carditis in children with non-rheumatic "growing pains" is no greater than in the general juvenile population. In the papers on diagnosis, clinicians have been reminded that one of the most useful diagnosic measures is the therapeutic test, the response of patients to adequate doses of salicylates. Also systolic murmurs should be regarded as significant only when they are accompanied by a history of rheumatic fever, cardiac enlargement or diastolic murmurs. In the absence of a specific test for rheumatism, which is badly needed, the sedimentation rate of erythrocytes is the most delicate non-specific index of rheumatic activity; the formol-gel reaction may also be useful. An important follow-up study on a thousand rheumatic children by E. F. Bland and T. D. Jones is reported. The study covered the period 1921 to 1936. By 1936, of the thousand patients, 239 were dead, 744 were living and 17 could not be traced. Of the 744 living, 605 or 81% had no limitation of physical activity and 312 of these had no clinical evidence of cardiac damage, 118 or 16% had slight to moderate limitation of physical activity, and 21 or 3% had great limitation of cardiac reserve. Of those who were dead, 48% had died within four years and 68% within six years. Bland and Jones found relatively little difference in prognosis regardless of whether the disease began before five years of age or between six and twenty-one years. Other authors have stated that the earlier the age of onset, the worse is the prognosis. F. A. Gornitskaya reported that in Russia the younger the child at the time of his first rheumatic attack, the more frequent were recurrences likely to be; he found no direct relationship between the severity of the first attack and the eventual cardiac damage, but he noted that children who had had more than four attacks were always greatly incapacitated. Of 1,068 rheumatic children who were watched by S. Gibson for a number of years, 60% sustained cardiac damage. It has been found that polyarthritis occurs oftener with carditis than does chorea, and that the longer the interval between the causal attack of rheumatic fever and the appearance of obvious mitral stenosis, the better the prognosis. A warning is issued that reports of the ultimate prognosis in rheumatic fever based on studies of patients with carditis must be interpreted with caution since they often do not take into account the rheumatic patients who escape cardiac damage.

In any review dealing with rheumatism greatest interest will probably lie in the investigations dealing with ætiology. The work published in 1939, though probably known in a general way to Australian practitioners, is described in this review in a way that will hold attention. It is agreed that infections, especially of the upper part of the respiratory tract, commonly initiate rheumatic attacks; but it is not agreed that such infections are "specific" provocatives. Hæmolytic streptococci are considered to be the commonest provocative of the disease. Support is given to this idea by the prophylactic effect of sulphanilamide reported by several investigators; reference to this will be made later. A. F. Coburn and R. H. Pauli have studied the significance of prolonged streptococcal antibody formation in rheumatic fever, and conclude that it indicates subclinical activity of hæmolytic streptococci. They also reported that a precipitin reaction occurred when serum of patients, withdrawn during the "silent period" after hæmolytic streptococcal infection of the throat, was mixed with serum of the same patients obtained a few weeks later after the onset of rheumatic fever. No definite conclusions as to the significance of the reaction could be reached. A lengthy reference is made to the work of C. A. Green on the recovery of hæmolytic streptococci from heart valves in fatal cases of rheumatic fever and in non-rheumatic controls, on the relation of throat infections to rheumatic fever, and on cardiac valves in which he found reddish-purple, coccoid bodies in preparations stained by the Gram method. Green's work led W. R. F. Collis to publish results of bacteriological investigations in which he recovered hæmolytic streptococci from certain tissues removed at autopsy in cases of rheumatic fever. Some details of the work of Green and Collis are given in the review, and the editors point out that if the work of these investigators is confirmed, it will give important support to the hæmolytic streptococcus theory of the causation of acute rheumatism. In spite of the apparently general acceptance of this theory, it must be pointed out that some writers have doubted whether streptococci are related to rheumatic fever at all; they hold this view because the polymorphonuclear reactions

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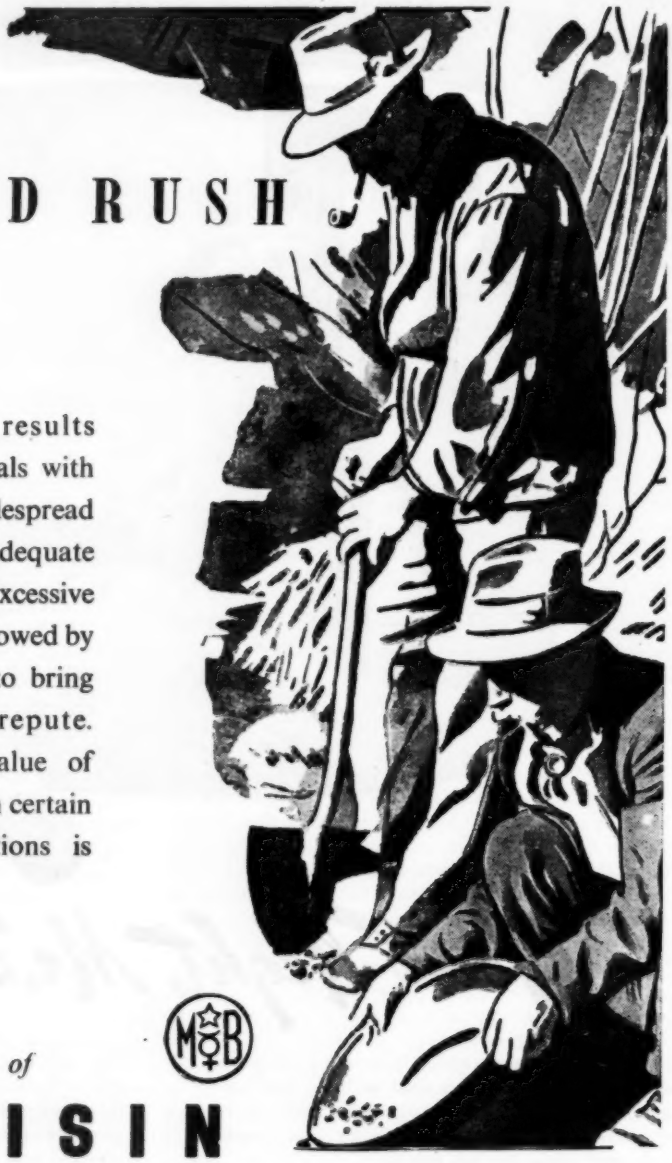

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usually found in joint tissues in cases of septic arthritis due to hæmolytic streptococci are not found in the joints of patients with rheumatism. D. H. Collins is quoted as believing that observations of this kind do not exclude the possibility of a streptococcal ætiology. Under the heading of the factor of bacterial allergy, reference is made to some work tending to show that alterations in tissue reactivity are associated with rheumatic fever and nephritis. In regard to the virus theory, reference is made to some Italian work from which it was concluded that in rheumatic fever a virus might be active, but only in symbiotic association with streptococci.

Reference has already been made to the prophylactic value of sulphanilamide. The work of A. F. Coburn and R. H. Pauli is mentioned. They gave daily doses of two to three grammes for four to eight months to 80 children who were in the inactive or quiescent stage of rheumatic fever; 79 escaped further signs of rheumatic activity. C. B. Thomas and R. France carried out similar studies on 30 juvenile and adult patients, giving daily doses of 1·0 to 1·3 grammes for seven months. None of the rheumatic patients receiving sulphanilamide had hæmolytic streptococcal infections or rheumatic attacks. The editors of the review remark that the importance of these studies can scarcely be exaggerated if the results are borne out by further work. It is interesting to note that Thomas and France, with F. Reichsman, have made a further report in *The Journal of the American Medical Association* of February 15, 1941. This recent report deals with 55 patients and is really a continuation of their preliminary report in 1939 and would certainly seem to indicate that this prophylactic method is of value. It is to be hoped that other investigators will try to confirm the findings.

In the foregoing the main features of the review as it concerns rheumatic fever have been mentioned. It is not surprising that the suggestion has been put forward that acute rheumatism should be made a notifiable disease. Were this done, we should be able to obtain at least some data about it, and in Australia data are urgently needed. We are told in the review that rheumatic fever and rheumatic heart disease have been greatly neglected by health authorities; "more furore is raised over one case of leprosy than over 100 cases of rheumatic fever". In again commending the "Seventh Rheumatism Review" to the careful attention of Australian readers, we would congratulate Hench and his fellow workers on their masterly treatise.

Current Comment.

THE TREATMENT OF TUBERCULOUS LUNG CAVITIES BY PARACENTESIS AND CONTINUOUS ASPIRATION (MONALDI'S METHOD).

PROBABLY no important discoveries in therapeutics are more eagerly examined by the medical Press and placed on trial by the medical profession than those which promise to constitute advances in the treatment of pulmonary tuberculosis. Within the last year or so we have hastened to analyse in these columns the reports which were appearing in British and foreign journals about the use of tuberculosis endotoxoid and of gelatin-acriflavine-calcium chloride ("G.A.C.C."), emphasizing, however, that these forms of treatment should be considered but as promising adjuncts to hygienic methods of stimulating the healing power of Nature. Although since then next to nothing has been heard of any favourable results accomplished by these new forms of treatment which seemed so well founded and which gave such good results in the hands of their originators, we do not hesitate to bring to the notice of readers a promising new surgical operation for the treatment of tuberculous pulmonary cavities, namely, puncture of the cavity through the chest wall and the establishment of continuous suction-drainage.

Physicians returning from abroad just before the war spoke with enthusiasm of this procedure (Monaldi's operation), which they had seen carried out at the Istituto Carlo Forlanini in Rome and which was then in an experimental stage, but the preliminary reports have appeared chiefly in continental journals not received in this country. Lately a full account of the method has been given in English by H. Roche,[1] with the object, he states, of encouraging its extensive trial. Details of the instrumentarium and technique have also been given in English by E. Kupka and Ruth Wells.[2]

For some years now, Roche points out, it has been recognized that tuberculous pulmonary cavities do not represent an equivalent amount of lung tissue lost by caseation and elimination: mechanical influences inside and outside the cavity are at work in their production. The lung is in a state of permanent distension, which tends to keep a cavity open once it has formed, and this, together with an additional pull on its walls during inspiration, contributes, according to Monaldi, to the creation of a perisphere of deflated lung tissue around the cavity. Further, if the bronchi communicating with a cavity become almost blocked, so that air may enter the cavity during the act of inspiration but escape only with difficulty or not at all during expiration, the cavity may be distended and the pressure within be greater than the atmospheric pressure. Monaldi recognized that the reexpansion of the deflated lung immediately surrounding the cavity plays an important part in the cure of those cavities which heal spontaneously or as a result of such simple relaxation-producing measures as artificial pneumothorax, where the intrapleural pressure is less than that of the atmospheric pressure; compensatory emphysema also plays some part in the filling in of these cavities during the process of healing. He considered that suction-drainage offered the best hope of obtaining this expansion or reexpansion of lung tissue to fill the cavity when measures to promote relaxation were inapplicable or ineffective; and from his experience with suction-drainage in empyema he felt that the method offered some hope of permanent healing since infective material was removed as fast as it was produced. Monaldi described three types of pulmonary cavity: retractile cavities, which may heal spontaneously (sometimes reappearing) and are favourably influenced by measures to produce relaxation; undeformable cavities which are very rare although radiological appearances might easily suggest the contrary; and, in between these two types, inert cavities which do not heal spontaneously nor respond to simple relaxation measures because of the infiltration of their walls with products of disease, but which might well be converted into retractile cavities by the correction of harmful mechanical forces and the removal of the disease products by suction-drainage. Monaldi's theoretical considerations appear to have been largely confirmed by experience; it appears that suction-drainage cleanses the walls of the cavity in a few days by elimination of its caseous and purulent contents, causes regression and absorption of surrounding exudative tissue, produces vasodilatation around the cavity, causes the secretions of the cavity to approximate to normal serum, eliminates tubercle bacilli from the wall, and permits of the rapid formation of healthy granulation tissue. It is stated that the treatment also produces a rapid improvement in the general condition of the patient which is very remarkable.

A quite imperative prerequisite for Monaldi's operation is that the visceral and the parietal pleura shall be firmly

[1] *Tubercle*, January, 1941.
[2] *The American Review of Tuberculosis*, September, 1940.

adherent in the region where the pulmonary puncture is to be made; hence artificial pneumothorax must always be tried before the operation can be considered. Since the operation was conceived to deal with a local manifestation of tuberculosis, namely, cavitation, it will be most effective when this local lesion only is present; but it has been tried in order to give relief to patients with tuberculous disease elsewhere in the lungs, whose general condition is unsatisfactory primarily owing to the presence of a cavity. The treatment may be tried for cavities located in any reasonably accessible situation, although those situated near large vessels present greater operative risks. Those in direct and extensive contact with the pleura which have little or no intervening lung tissue capable of reexpansion, will not be likely to heal concentrically or completely; and small cavities may be difficult to puncture even under the fluoroscope. The method must obviously not be applied to a cavity in the centre of a rapidly breaking down area of acute caseous exudative tuberculosis. The operation itself it accomplished with a trocar and a special graduated glass cannula with a lateral branch at the proximal end through which a slender catheter may be introduced into the cavity. The trocar is very much narrower than the cannula except at the sharp end. There is a lateral aperture in the cannula near the end, so that when the cannula enters the cavity air may transmit to an attached manometer the intracavitary pressure which oscillates with respiration. When the catheter has been introduced and the cannula carefully withdrawn, the catheter is fixed to the skin by means of a silk thread and adhesive strapping. During the first twenty-four hours the cavity is gently aspirated with a syringe, and thereafter very gentle suction is applied for a number of hours each day, by means of an electric pump or some simple device such as siphonade between two large bottles of water. Pyrexia may be expected for a few days after the operation, but it soon subsides and the management of the patient during the several months that the treatment is in progress presents no special difficulties. Complications such as hæmorrhage and embolism do not occur frequently, but pyothorax would be a likely sequel in the absence of pleural symphysis at the point of puncture. Infection of the catheter track is uncommon.

J. Alexander in his text-book of the collapse therapy of pulmonary tuberculosis states that the drainage of tuberculous cavities has been carried out in isolated cases for centuries, but has rarely been advocated with enthusiasm. There is no doubt that this form of treatment will now have the extensive trial that Roche has done so well to encourage. In fact, it seems probable that it may prove the most important advance in the surgery of tuberculosis since the introduction of thoracoscopic pneumolysis.

FAMILIAL NON-HÆMOLYTIC JAUNDICE.

FAMILIAL hæmolytic or acholuric jaundice is a common enough disease. Recently William Dameshek and Karl Singer have described two families in which certain members exhibited a chronic jaundice without any evidence that it was hæmolytic in origin.[1] Their discussion is thorough and erudite, and will be better appreciated if we outline the cycle of bile pigments in the body. Any type of jaundice is of course caused by hyperbilirubinæmia. The bilirubin comes from the hæmoglobin of broken-down erythrocytes and passes to the liver, where it is absorbed and passed through the liver cells to the bile canaliculi, down which it flows to the bowel. Most of the pigment reaching the bowel passes out with the fæces, to which it gives colour. Some is reabsorbed by the bowel, becomes urobilinogen, and is carried in the circulation to the liver and kidneys, which both excrete it. The more pigment there is in the bowel, the greater is this reabsorption and consequent excretion of urobilinogen in the urine. In passage through the liver bilirubin becomes altered. It is said to be converted from indirect or hæmobilirubin to direct or cholebilirubin. The former has a high renal threshold and is said to cause an indirect reaction to the Van den Bergh test. The latter has a lower renal threshold, and in obstructive jaundice may appear in the urine before icterus is clinically obvious. It is said to give a positive direct reaction to the Van den Bergh test. Hæmolytic jaundice results from the destruction of excessive numbers of erythrocytes. Consequently there is some degree of anæmia, with an increased reticulocyte count indicating that the bone marrow is actively replacing destroyed cells. The spleen usually becomes enlarged. The fæces become more intensely pigmented and their daily content of bilirubin derivatives greatly increased. The urinary urobilinogen increases as more pigment is absorbed from the bowel. In familial hæmolytic jaundice the disease depends on an abnormality of the red cells, which are increased in thickness and in their fragility to hypotonic saline solution and lysolecithin. The ability of the liver to excrete a measured dose of bilirubin injected intravenously remains unimpaired, less than 15% being left in the blood stream after three hours.

The disease described by Dameshek and Singer was a chronic jaundice, usually of slight degree, with a strong family incidence and giving an indirect reaction to the Van den Bergh test. In one family the only two children were affected, and it was said that the grandfather and father had suffered from chronic icterus. In the other family the father and all the children, three boys and five girls, were affected. Icterus was never pronounced and sometimes absent. Other symptoms were absent or were merely fatigue and asthenia. Without careful investigation it would have been easy to make a diagnosis of familial hæmolytic jaundice. A little care, however, revealed that there was no evidence at all of excessive hæmolysis. The daily excretion of bile pigment in the fæces was normal or slightly diminished. The urinary urobilinogen was not increased. Anæmia was present in some cases, but reticulocytosis was never beyond normal limits. The spleen was not enlarged, nor did the red cells show spherocytosis, increased thickness or increased fragility in any case. Injection of 50 milligrammes of bilirubin into the blood stream revealed a delay in excretion of the pigment. Obviously the condition has its basis not in excess hæmolysis, but in impaired hepatic excretion, and Dameshek and Singer suggest the alternate name of "constitutional hepatic dysfunction". They mention the work of Malloy and Löwenstein on a strain of rats showing hereditary non-hæmolytic jaundice; these workers describe the condition as an "inability of the liver to transform indirect to direct bilirubin at a rate sufficient for normal excretion". Certainly the icterus is not due to biliary obstruction beyond the liver cells, for, as the authors state, the bilirubin was always of the indirect variety. The best evidence in favour of this conclusion was the absence of bilirubin from the urine when icterus was present. Of this the authors make scant mention beyond stating in their introductory paragraphs that the jaundice was acholuric. They make more of the fact that the reaction of the bilirubin in the blood stream to the Van den Bergh test was indirect in type. Many able workers nowadays, including G. A. Harrison,[1] do not believe that the Van den Bergh test is a reliable means of distinguishing indirect from direct bilirubin, the two reactions being a measure of intensity rather than type of jaundice. That, however, does not detract from the excellence of this report and discussion of some striking clinical material. Of particular interest is the care taken in the examination of the red cells, especially of their size and thickness. Dameshek is responsible for evolving a direct method of measuring the thickness of the red cells which probably gives better results than the indirect method previously used.

There can be little doubt that this condition of familial non-hæmolytic jaundice does exist. Its separation from chronic parenchymatous disease of the liver is difficult, though this is rarely familial and is unlikely to be a non-progressive condition compatible with long life as in the older generation of the second family discussed in this report. It seems more likely that the condition described by Dameshek and Singer is an inherited physiological

[1] *Archives of Internal Medicine*, February, 1941.

[1] "Chemical Methods in Clinical Medicine", Second Edition, page 245.

aberration. This is the view taken by the authors, who stress the importance of distinguishing it from familial hæmolytic jaundice. They deserve considerable credit for an exceedingly interesting report.

PARTIAL ABLATION OF THE BRAIN IN THE TREATMENT OF MENTAL DISORDER.

IN a review of recent advances in neuropsychiatry, S. Cobb[1] has lately set out the present position of the new and interesting operation of cerebral "lobotomy" for the relief of certain diseases of the mind. This form of treatment was first practised in Portugal by E. Moniz, who published an account of it in 1936. Since then in various countries, chiefly in the United States of America, well over a hundred patients have been subjected to the operation.

Cerebral lobotomy, which Cobb thinks would be better described as frontal leucotomy, consists of a partial severing of the white tracts from the frontal areas of the brain. It is based on many well-known observations made over a period of nearly a century concerning brains destroyed or deformed by tumours, injuries and operations. It is surprising how very little disturbed have been many of the subjects of extensive damage to the forepart of the brain; however, mental changes occur after excision of parts of the frontal lobes, and these changes are exhibited in alteration of personality; generally they are not of such a degree as to destroy the subject's ability to lead a normal social existence, but they can be fatal to persons doing intellectual work. Many persons who have suffered operative or traumatic ablation from the forepart of the brain exhibit diminished inhibition of affective response, many are euphoric and some have such symptoms as loss of initiative, loss of attention, slowness of thought, loss of memory for details and weak association. On the other hand, other persons whose behaviour was very abnormal on account of the morbid processes in the brain for which amputation of the frontal pole was undertaken, were very much better afterwards: stubbornness, irritability and hostility have given place to docility and pleasant ways. Animal experiments which have been made during the last half century have given further knowledge of an exact kind on the function of various parts of the brain and apparently it was some of the work of J. F. Fulton and his collaborators in England that led directly to Moniz's "*Tentatives opératoires dans le traitement de certaines psychoses*", for he mentions that a chimpanzee in Fulton's laboratory, deprived of her frontal areas, although less able to perform complex tasks, lost her anxiety over failure and seemed much more placid.

It is of great interest from the physiological standpoint to learn from the operations of cerebral lobotomy so far reported that bilateral ablation of the frontal areas of the brain in man produces symptoms much like those postulated on the basis of the animal experiments. Moreover, as Cobb points out, these operations indicate that the symptoms observed in cases of tumour and trauma of the frontal areas of the brain are specific for frontal lesions and occur only when the lesions are bilateral. In the patients operated upon by removal of their frontal areas for mental disorder, depression, agitation, compulsion, suspiciousness and irritability were in a large proportion replaced by inertia, euphoria, playfulness, reduction of consecutive thinking and indifference to the opinion of others. But among the "secondary results" are given evasion, bluffing, talkativeness, aggressiveness, teasing, indecency, inattention and poor judgement.

It is generally accepted that the frontal areas of the brain are associative in their function. Stimuli reaching one or more of the receiving stations in the cortex spread rapidly through ever widening association pathways to many other areas of the cortex. This is a process of "long circuiting" of the nerve impulses; there is delay in response, time and opportunity are given to the brain to respond to the outside stimulus in the light of past experience. Cobb considers this the essential mechanism of intellect and concludes that it is justifiable to deprive a patient of the most important part of his seat of intellect in order to relieve him of emotional troubles only when he is old and otherwise hopelessly afflicted. He recommends the operation of cerebral lobotomy only for persons over sixty years of age who have long suffered from agitated depression and points out that sufficient time has not yet elapsed to observe possible unfortunate sequels of the operation, such as epilepsy. Whatever the outcome may be, it is clear that Moniz deserves credit for the introduction of a procedure which is logically founded, bold and ingenious. But his operation is a very oblique approach to the treatment of mental disorder and in this way not unlike the operation of total thyreoidectomy which is practised to throw sand on the inner fires of persons with little cardiac reserve.

[1] *Archives of Internal Medicine*, December, 1940.

COORDINATION OF MEDICAL SERVICES: THE PROFESSION AND THE PUBLIC.

IN the leading article of the issue of May 17, 1941, it was shown that the conditions of medical practice among the civil population will become more and more upset as medical practitioners continue to join the defence forces for home service and for active service overseas. It was also shown that there were ways in which the general public could ease the burden on the overloaded practitioners who are doing their best to meet the needs of civil practice. Since the publication of this article a letter has been received from one of the practitioners in a two-man town enclosing the following circular, which he states has been sent out for the last few months with all accounts and receipts and has also been printed once or twice in the local papers.

REQUEST FOR PUBLIC CO-OPERATION.

During the war, it is inevitable that there will be many periods when there is only one doctor in . . ., on whom there will be a heavy strain. His work will be easier, and people will receive more efficient service, by observing the following simple rules:—

1—Make attendances at the hospital before 10 a.m., or at the surgery during consulting hours (week days—2-3 p.m., and 7-7.45 p.m.: Saturdays—11-12 a.m. and 7-7.30 p.m.).
2—In making requests for visits from the doctor, do so before 10 o'clock of a morning or 3 o'clock of an afternoon, and specify whether the call is immediately urgent, or can wait an hour or two.
3—Do not delay the doctor unnecessarily in telephone or other conversation.
4—Do not ring up during meal times, and let the doctor have evenings and week-ends as free as possible.

If these points are observed, it is quite possible for one doctor to carry on the work, and everybody to be properly looked after.

The practitioner (who wishes to remain anonymous) writes as follows: "There is no doubt that this notice has had a very salutary effect, and has rendered our task much lighter, and has saved us a great deal of travelling and night calls. And we find that our week-ends are entirely free of the petty business which so often used to spoil a Sunday afternoon.

"We have the care of some 4,500 people and a public hospital and include the usual ancillary aids, but since educating the public with these pamphlets we have found that either of us is able to manage very well for a month without assistance; and it is my opinion that, given a week-end off once a month, and an assistant for a week or two every two months so that we could devote a few hours to non-urgent surgery, we could manage indefinitely. Of course very little non-urgent surgery is done in the absence of either partner and all midwifery is done in hospital. Our income is of course showing a drop, but that is not material at the present juncture. There are more important things."

This extract from the letter is published to show that the Australian public will respond to an appeal of this kind. The suggestions made in the leading article included one or two points not mentioned by our correspondent and doubtless others could still be added.

Abstracts from Medical Literature.

GYNÆCOLOGY.

Removal of the Superior Hypogastric Plexus in Gynæcological Conditions.

E. HENRIKSEN (*The Western Journal of Surgery, Obstetrics and Gynecology*, January, 1941) reports 100 cases in which the superior hypogastric plexus was removed. Although this operation was performed on 147 patients, only 100 are reported, owing to insufficient clinical data. The operation was performed for dysmenorrhœa, pelvic causalgia, carcinoma, endometrioma, *Mittelschmerz*, *pruritus vulvæ* and dyspareunia. The author concludes that the pain of intractable carcinoma can be partially or wholly controlled by this operation. At the conclusion of the discussion which brought out the point that the operation was not physiologically sound, the author replied that if a patient is requiring one and a half grains of morphine at frequent intervals and then after the operation requires none, the operation is worth while until something better is available for these patients.

Œstrogens and Cancer in the Human Female.

S. H. GEIST AND U. J. SALMON (*American Journal of Obstetrics and Gynecology*, January, 1941) raise the question whether œstrogens are carcinogenic in the human female. Their studies were conducted on a series of 206 women, who were treated with œstrogen over periods varying from six months to five and a half years and in whom vaginal and endometrial biopsies were performed during varying stages of the period of treatment. The ages of the patients varied from twenty-five to eighty years, the majority being over forty. Various types of œstrogens were administered and the total amount given varied from 500,000 to 23,400,000 international units. The authors concluded that the administration of œstrogen to women suffering from an œstrogen deficiency resulted in regenerative changes in both the vaginal and uterine mucosa, and also that its continued administration did not produce any evidence of abnormal growths. In the authors' opinion it is impossible to administer to human beings over long periods of time the huge doses that would justify comparison with those used in the experimental production of carcinoma in rats; further, there appears to be no evidence to justify the fear that carcinoma of the genital tract may result from the therapeutic use of œstrogens.

Obscure Pelvic Pain.

PRESTON T. BROWN AND JOHN W. PENNINGTON (*The Journal of the American Medical Association*, January 18, 1941) confirm the observations of Hunner that obscure pelvic pains are of urinary rather than gynæcological origin. They stress the fact that genital disease may be simulated by ureteral stricture, stricture of the urethra or contracture of the vesical orifice, chronic urethritis and trigonitis, and even ptosis of the kidney. The symptoms may be dysmenorrhœa, lumbar or sacral backache, unilateral or bilateral deep pelvic pain, chronic constipation, and sensation of prolapse and pressure in the pelvis. The authors palpate the whole of the urinary system, noting abnormality or tenderness, whilst the urine is examined and excretion urography is carried out. Two cases of urethral stricture and contracture of the bladder are cited. The patients were cured by urethral dilatation and bladder distension, followed by silver nitrate instillation. Six cases of ureteral stricture were treated with excellent effect by dilatation of the ureter and bladder distension.

Testosterone Propionate and the Breast.

PAUL V. DUFFY AND JOSEPH CORSARO (*The Journal of the American Medical Association*, January 4, 1941) discuss the suppression of lactation in the puerperal breast by testosterone propionate and report the results of treatment in 25 cases. The authors observed that the time at which the testosterone is administered distinctly affects the results of treatment. A dose of 50 to 75 milligrammes of testosterone propionate was effective in relieving mammary engorgement and in suppressing lactation in all cases when administered at the beginning of lactation, that is, on the third or fourth day after delivery, whereas similar doses injected immediately *post partum* or after lactation had been established for some time proved ineffectual. The authors explain these results by stating that the testosterone propionate in the doses employed was effective in suppressing lactation only when the œstrogenic factors which inhibit mammary secretion during pregnancy had ceased to function, and before regular lactation had been established through the stimulation afforded by suckling. They are of opinion that the pituitary depression caused by moderate doses of testosterone administered at the initiation of the secretory phase of the breasts is sufficient to inhibit the lactogenic function of the pituitary gland and to suppress lactation. The dose administered was 50 to 75 milligrammes of testosterone propionate subcutaneously over a period of two to three days, usually at intervals of twenty-four hours. Smaller doses of five to ten milligrammes were administered with effect to relieve the pain and tenderness in the engorged breast without diminution of secretion, provided nursing was continued at regular intervals. The authors state that methyl testosterone administered by mouth in doses of 25 milligrammes at intervals of four hours for six doses produces results comparable with those obtained with 50 to 75 milligrammes of testosterone propionate administered subcutaneously.

Uterus Unicornis.

JOSEPH D. FERRONE (*The New England Journal of Medicine*, January 23, 1941) presents a case of *uterus unicornis* in which treatment by conservative surgery was adopted. The patient complained of deep pelvic pain and a sensation of pressure on the rectum. A mass was palpated on the left side and at operation proved to be the *uterus unicornis*. This was straightened and suspended to relieve the symptoms. The ectopic tube and ovary were left untouched. The patient gave birth to a normal child one year after the operation. After surveying the literature the author reports that abnormalities of the pelvic adnexa are almost always discovered accidentally at operation, but suggests that if an abnormality is suspected, a uterosalpingogram should be prepared. The author gives a brief review of the embryology of the female genital system.

Human Urine for Biological Pregnancy Diagnosis.

L. D. SCOTT (*The British Journal of Experimental Pathology*, December, 1940) has described a rapid method for the routine preparation of gonadotropic hormone extracts from human urine, for application to the biological pregnancy tests. The extracts are suitable for the Aschheim-Zondek, Friedman and Hogben tests. The urine is diluted, brought to pH 4·0 (brom-phenol blue indicator) with hydrochloric acid and the gonadotropic hormones are adsorbed by the addition of an aqueous suspension of kaolin. The kaolin is separated by centrifuging and the hormones are extracted from the precipitate with dilute sodium hydroxide. The supernatant fluid is collected after centrifuging, it is made slightly acid to litmus with hydrochloric acid, absolute alcohol and glucose are added, and the solution is then ready for injection. The extract is stable for several weeks if stored in the refrigerator. For the Hogben test the extract is made in rather more concentrated form than for the other tests. An important feature is that toxic substances from human metabolism and bacterial bodies in septic urine are also adsorbed on the kaolin precipitate, but are not extracted with the gonadotropic hormone by the sodium hydroxide. Urine from 1,000 cases was used for pregnancy diagnosis, and Friedman and Hogben tests were made simultaneously. The results in all cases were in complete agreement and were confirmed by the subsequent clinical condition of the patient.

Uterine Fibromata and Irradiation.

W. E. COSTOLOW (*The Journal of the American Medical Association*, February 8, 1941) reports on a series of 986 patients with uterine fibromata who were treated by radiation therapy between 1927 and 1937; the follow-up period varied between two and a half and twelve and a half years. The author points out that if the diagnosis is in doubt operation should be undertaken. He thinks that possibly too much conservatism is being displayed in the selection of patients for radiation therapy. The average age of the patients reported was 42·5 years; approximately 75% of the women were over 40 years of age—in other words, of menopausal age. The author holds that irradiation menopause is no more trouble than normal menopause. Pre-existing pelvic inflammation is not a justifiable contraindication to radiation therapy. Acute pelvic inflammation occurred after irradiation in only one case in the series. Cancer of the uterus developed in four patients after radiation therapy—0·4%. "A remaining uterus or residual mass is no more likely to become cancerous than a normal uterus in a woman of the 'cancer age'." Inflammatory degeneration of large fibroid tumours occurred in two cases; successful operation was performed later in both instances. In 722 cases the tumour was the size of a three months' pregnancy or smaller; the uterus was reduced to normal in 84·3% and to normal or only slightly enlarged (less than twice normal) in 93·5%. Of patients with these tumours,

2·4% were operated on later. In 264 cases the tumour was the size of a four months' pregnancy or larger; the uterus was reduced to normal in 36·7% and to normal or only slightly enlarged in 52·7%. Of patients in this group, 4·2% were operated on later. In tumours of this size the use of X-rays alone, preceded by curettage, is the most satisfactory form of radiation therapy. The author states that careful selection of cases is the most important single factor in the successful irradiation of uterine fibromata. Incorrect diagnosis was the reason for the majority of his failures. In the entire series of 986 cases operation was necessary in 2·8%.

OBSTETRICS.

Œdema in Preeclampsia and Eclampsia.

WILLIAM J. DIECKMANN AND SYLVIA KRAMER (*American Journal of Obstetrics and Gynecology*, January, 1941) report from the department of obstetrics and gynæcology of the University of Chicago and the Chicago Lying-In Hospital their observations of some 2,700 patients with toxæmia; they have made various examinations in the majority of cases. Their observations indicate that the changes incidental to normal pregnancy, namely, an increased capillary permeability and a delayed or impaired water and sodium chloride elimination, are greatly augmented in certain cases owing either to internal or to external factors, and result in an abnormal gain in weight and eventually in œdema. Excess salts, water or products of metabolism are eliminated from the circulation by way of the kidneys. If the renal excretion is slow these substances pass into the tissue spaces, remaining there until they can be excreted. The authors finally concluded that in normal pregnancy the venous pressure in the legs is increased and causes an increased loss of fluid from the blood into the tissues of the legs and that the average serum protein concentration is 6·5 grammes *per centum* and the average colloid osmotic pressure of the serum protein is 28·7 centimetres of water. Preeclampsia and eclampsia, on the other hand, may occur if these changes are of greater magnitude than normal or if they are exaggerated by internal or external factors. Thus in these diseases greater alterations than normal were found in the venous and capillary pressures and capillary permeability. The average serum protein concentration in œdematous patients with preeclampsia was 6·22 grammes *per centum*, with eclampsia it was 6·7 and with vascular-renal disease and normal renal function it was 6·67 grammes *per centum*; the average colloid osmotic pressure of œdematous preeclamptic patients was 24·9, and of toxæmic patients without œdema the pressure was 26·5 centimetres of water. The retention of sodium, chlorine and water was greatly increased in some pregnant patients; this resulted in an abnormal gain in weight, and, finally, in demonstrable œdema. Changes in the concentration of the female hormones are apparently associated with œdema, but whether this is the cause or the result cannot be stated from present knowledge. The prevention and treatment of œdema are dependent on the limitation in the diet of the principal components of œdema fluid, namely, sodium chloride and water. The curtailment of sodium chloride in the diet presents fewer difficulties and causes less discomfort to the patient than the restriction of water.

Analgesia and Anæsthesia in Labour.

D. G. TOLLEFSON (*The Western Journal of Surgery, Obstetrics and Gynecology*, January, 1941) reviews a series of 500 patients in the treatment of whom an attempt was made to produce complete analgesia by the use of pentobarbital sodium and scopolamine. In an analysis of the results it was found that complete success was obtained in 68% of cases, a moderately good result was obtained in 19% and failure in 11%; excitement occurred in 10%. Of the infants, 75% breathed spontaneously and 5% were alarmingly asphyxiated. There were no maternal deaths. The author considers that dosage must be individualized and that a nurse adequately trained in the administration of analgesia should be in constant attendance; he further points out that the physician who assumes the responsibility of giving analgesia must be prepared to treat asphyxia and *apnœa neonatorum*. He concludes with the statement that while this method of analgesia has a place in obstetrics it might be better if the pendulum of professional thought, as well as public opinion, would swing back to a less complete analgesic technique. This latter statement was in accordance with the views of the majority of those who discussed the paper.

X-Ray Visualization of the Placenta by Soft Tissue Technique.

A. L. DIPPEL AND W. H. BROWN (*American Journal of Obstetrics and Gynecology*, December, 1940) describe the localization of the placenta in 262 examinations. They used the technique first described by Snow and Powell and used by Smith. At the site of placental implantation the uterine wall appears to be unusually thickened and this forms the basis of localization of the placenta by the soft tissue technique. The placenta was clearly visualized in 236, or 90%, of the 262 patients. Non-visualization was due to hydramnios, twin pregnancy or other complications. No errors in X-ray localization of the placenta were found in the 53 instances which were checked by reliable clinical methods. This technique finds its greatest usefulness in those cases of vaginal bleeding in which the whole of the placenta can be visualized above the level of the iliac crests.

Spinal Anæsthesia in Obstetrics.

J. C. SHULL AND E. P. MANNING (*The New England Journal of Medicine*, February 13, 1941) review the histories of some 5,425 deliveries culled from the literature and report the result of 150 deliveries *per vias naturales* and 23 Cæsarean sections performed under spinal anæsthesia. The authors used the heavier type of solution and aimed to produce anæsthesia up to the level of the umbilicus; if anæsthesia did not reach this point no relief was obtained from the uterine pain, although relaxation of the pelvic outlet was obtained. A small dose of 0·5 cubic centimetre of 1% solution of pantocaine with 1·0 cubic centimetre of a 10% glucose solution was used; although small doses are safe, large doses may be dangerous. For Cæsarean sections 0·8 to 1·2 cubic centimetres of a 1% solution of pantocaine with 1·5 cubic centimetres of glucose solution was used. The type of case was usually one in which an operative delivery was indicated or in which the patient had a cough, toxæmia, eclampsia or heart disease. There were no maternal deaths and no stillbirths. The authors were able to show that no undue relaxation of the cervix is obtained, as claimed by French authors; and spinal anæsthesia is not an advantage in *accouchement forcé*, nor is it desirable when intrauterine manipulation is indicated owing to persistent uterine contractions. The only distressing complication was headache, which occurred in 17% of the patients delivered from below and persisted for as long as six days.

The Treatment of Toxæmias of Pregnancy.

FARQUHAR MURRAY (*The Practitioner*, January, 1941) gives his views on the treatment of the toxæmias of pregnancy. In *hyperemesis gravidarum* the bowels should be kept open and three grains of calomel may be given each night followed by a non-effervescing saline. A persistently high or rising pulse rate is a most important indication of impending disaster. Many patients who have ceased to vomit and are taking a moderate diet and have a pulse rate over 100, go slowly downhill or suddenly collapse and die within twenty-four hours. A pulse rate over 100 is disquieting, one over 120 with other symptoms is dangerous, but one over 120 without other obvious symptoms is sinister. Termination of pregnancy is indicated if the pulse rate is over 120 in spite of treatment and there are other toxic signs. The presence of jaundice is a clear indication. When hyperemesis occurs late in pregnancy this is an indication for an immediate termination of pregnancy.

The Oral Administration of Pregneninolone in the Treatment of Spontaneous Abortion.

L. KROHN AND J. M. HARRIS (*American Journal of Obstetrics and Gynecology*, January, 1941) report the results of treatment in a series of 50 consecutive cases of threatened and habitual abortion, in which the patients were treated by the oral administration of pregneninolone (anhydro-hydroxy-progesterone). The patients were given a supply of tablets to have on hand. Those who had a history of repeated abortion were instructed ot take 10 milligrammes twice a week until movements were felt; in special cases patients were advised to keep a record of when their periods were due, and at that time to restrict their activity and to take 10 milligrammes a day during the time that the period would have lasted. To those patients who had signs of impending abortion 10 milligrammes were given twice a day until all symptoms subsided. In the group of 50 there were eight failures, seven of which were among the group of threatened abortions. Pregneninolone has to be administered in larger doses than progesterone, but the advantage of oral administration outweighs this fact; moreover, the cost is much less. There was no evidence of any undesirable effects, although large doses were employed. The results compared favourably with those following the use of progesterone in oil.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on April 17, 1941, at the Royal Alexandra Hospital for Children, Sydney. The meeting took the form of a number of clinical demonstrations by members of the honorary medical staff of the hospital. Parts of this report appeared in the issues of May 17, 24 and 31, 1941.

Burn Contractures Treated by Skin Grafting.

DR. H. G. HUMPHRIES showed a male child, aged sixteen months, who had been admitted to hospital on July 4, 1940, with the history that on May 1 his clothes had caught fire and he had been burnt. The burns on the face and neck had been followed by contractures.

Examination revealed scars on the lower part of the face, the chin, the neck and the upper part of the thorax. The lower lip was completely everted owing to contractures of the neck; the child dribbled constantly and had difficulty in retaining food. Complete healing had not occurred on either side of the face. Movement of the lower jaw and movements of the neck were limited.

At operation on July 12 Thiersch grafts were taken from the thigh and put on the unhealed areas on the face; the face had healed by July 31. On September 20 a tube pedicle graft was formed on the left lower quadrant of the abdomen. On October 4 two of the main contractures of the neck were cut at their lower end, at the site of their insertion into the chest. On January 17, 1941, the tube graft was transferred from the abdomen to the left forearm. On February 14 the tube graft was transferred to the neck on the left side. On March 7 the end of the graft still attached to the wrist was transferred to the right side of the neck. The graft healed satisfactorily, and at the time of the meeting it was ready to be incorporated in the neck.

Dr. Humphries said that for extensive lesions such as the ones under discussion, associated with induration, scarring and contraction of the tissues, tube grafts were most satisfactory. They supplied a good bulk of skin and some subcutaneous tissue. This allowed the removal of some of the scar tissue and its replacement by pliable tissue. In the case of small children the abdomen was the best place to obtain a large tube. According to the site of the injury, the arm or leg might be the most convenient vehicle to convey the graft by two easy stages to its final position.

"Bobby Pin" in the Abdomen.

Dr. Humphries also showed a girl, aged three years, who had been admitted to hospital with the provisional diagnosis of acute appendicitis; she had had abdominal pain and vomiting for three days.

On examination the child was found to have a temperature of 100° F. Slight muscular rigidity was present in the right side of the abdomen, but there was no tenderness. The urine was found to contain pus, and fortunately an X-ray examination of the renal tract was made in an effort to find an anatomical basis for the pyuria. The films revealed a foreign body; Dr. H. R. Sear, on examining them, described the foreign body as a "bobby pin" in the abdomen, to the right of the first and second lumbar vertebræ; he thought that it was probably in the second part of the duodenum. Dr. Sear suspected from the position of the pin, however, that it lay behind the duodenum, and he suggested a barium meal examination. This was made, and he subsequently reported that the foreign body lay outside both duodenum and transverse colon.

The upper part of the abdomen was opened by a right paramedian incision. Behind the duodenum there was some tissue induration, but no foreign body could be felt. The second part of the duodenum was opened. No foreign body could be seen, but in the posterior wall, adjacent to the area of induration, the tip of a "bobby pin" was felt. This was gripped in forceps and withdrawn, and the duodenum and abdomen were closed. The child made an uninterrupted recovery.

Dr. Humphries said that it seemed plain that the child had swallowed the "bobby pin", which became impacted in the duodenum and ulcerated through the wall. Its relation to the pyuria was not understood, but this also had cleared up.

Ectopia Vesicæ.

DR. G. M. B. HALES showed a male baby, aged ten months, a well-nourished child, with a defect in the abdominal wall; the anterior wall of the bladder was absent. The ureters opened into the vesical mucous membrane; this was revealed by the absence of the abdominal wall in that region. The penis was incompletely developed. An X-ray examination revealed that the anterior portion of the ischium and the pubis, including the symphysis, were not developed. A left inguinal hernia was present and had been difficult to reduce on several occasions.

Dr. Hales said that the care of the child so far had consisted simply in scrupulous attention to cleanliness, and had been so effective that no urinary infection had occurred; this was a striking tribute to the mother. In view of the child's good condition, an attempt would be made to transplant the portions of the vesical mucous membrane bearing the ureteric orifices, complete with the ureters, extraperitoneally into the colon. If this procedure was successful, herniorrhaphy would be performed later.

Dextrocardia.

Dr. Hales also showed a female child, aged five years, who had been admitted to hospital on April 7, 1941, for removal of her tonsils and adenoids. Dextrocardia was found on examination; there was no history of cardiac failure. The tonsils and adenoids were removed on April 8. An X-ray examination of the chest revealed dextrocardia; the stomach was on the left side and the liver and spleen were normal. The lungs appeared normal.

Dr. Hales said that this was an example of dextrocardia without malplacement of any other organs, in a healthy, symptomless girl. The cardiac efficiency was unimpaired, and anæsthesia (ethyl chloride and ether given by the open method) was well tolerated. One interesting point was that the rotation of the heart to the right was not quite complete. The X-ray examination revealed the bulging right border of the heart outside the apex beat. An electrocardiographic examination was to be made.

Hydatid Disease of the Mediastinum.

DR. SHEDDEN DAVIS showed a female patient, aged ten years, who had been admitted to hospital on April 23, 1940. She had had an attack of pneumonia six weeks previously, and this had not satisfactorily cleared up. She had a slight cough and was easily tired. She had always lived in Sydney. A dog was kept in the house.

An X-ray examination of the chest revealed a slightly rounded shadow, some three inches in diameter, lying in the upper part of the lower lobe of the right lung; it was considered to be a hydatid cyst. A second less dull area was present, extending downwards from the right hilum. It was thought that this was possibly due to a leaking hydatid cyst or to massive collapse due to the pressure of the hydatid cyst. The Casoni test produced a doubtful reaction. A blood count gave the following information: the erythrocytes numbered 4,400,000 and the leucocytes 8,300 per cubic millimetre; of the leucocytes, 76% were polymorphonuclear cells, 12% were lymphocytes, 12% were monocytes, and no eosinophile cells were seen.

At operation on May 8, 1940, the eighth and ninth ribs were resected in the mid-scapular line and the lung was stitched to the pleura; the cyst was removed from the right lung and the adventitia cavity was drained. The child's progress after operation was satisfactory and the wound healed. She was discharged from hospital on June 15, 1940.

She was readmitted to hospital on October 26, 1940, for the removal of the other cyst. An X-ray examination after a barium meal revealed that the cyst lay immediately to the right of the lowest portion of the œsophagus above the diaphragm, and was apparently contiguous with it.

At operation on November 13, 1940, the tenth rib was resected and the cyst was aspirated and removed. The cyst cavity incision was sutured. The chest wall was sutured in layers without drainage. The cyst was lying in the mediastinum and partly projected into the right pleural cavity. The child made an uninterrupted recovery.

Dr. Davis said that hydatid cysts of the mediastinum were rare in the records of the hospital. Considerable interest attached to the diagnosis of the site of the second cyst when the child was first admitted to hospital. The matter was finally settled only by means of an opaque meal, which fixed the position of the œsophagus in the picture and the position of the cyst relative to the œsophagus. Approach through the lateral wall gave ample room and access for the necessary manipulations.

Hemiplegia.

Dr. Davis then showed a female patient, aged ten months, who had been admitted to hospital on March 21, 1941. The mother had noticed weakness of the child's left arm and leg and of the left side of the body for two months. The child was able to sit up. The birth was instrumental and the child was a twin; the other twin was stillborn.

Examination revealed that the circumference of the child's head was 16·5 inches; the left arm and leg were weak. Encephalography revealed that the left ventricle was small, and it appeared as if the pressure might be increased; the third and fourth ventricles were normal. The cortical pathways were obliterated on the right side, presumably owing to a cortical lesion. There was slight deviation of the central line to the right, owing to contraction.

Dr. Davis said that interest lay in the understanding of the probable pathology of the hemiplegia. A large subarachnoid hæmorrhage at birth would account for the complete non-entry of air to the cerebral sulci on the affected side. In addition, such a hæmorrhage would bring about an ischæmia of the cerebral cortex at birth; some degree of general atrophy and gliosis would follow, with consequent formation of a diffuse traction ampulla on the whole of the lateral wall of the lateral ventricle, which would become dilated.

Fifth Ventricle.

Dr. Davis finally showed a male patient, aged four months, who had been admitted to hospital on March 18, 1941, having suffered from convulsive attacks (three or four per day) for six weeks.

On examination the child appeared normal; no hydrocephalus was present and the anterior fontanelle was not enlarged. The Wassermann test produced no reaction and the cerebro-spinal fluid was normal. Encephalography revealed abnormal development of the third ventricle upwards and abnormal divisions in each of the lateral ventricles. This suggested a congenital abnormality; there was no evidence of tumour. The basal cisterns were much enlarged; there was no evidence of air in the cortical pathway. The last phenomenon suggested increased pressure.

Dr. Davis remarked that this was the first occasion on which a fifth ventricle had been discovered in the hospital. Its symmetry and a possible alteration in the shape of each lateral ventricle made it unlikely that air entered it only after rupture of one lateral wall of the *septum pellucidum*—rupture at the time of the encephalographic examination. More probably some other developmental defect could be postulated from its presence. The fifth ventricle probably had no direct bearing on the occurrence of the child's convulsive attacks. These were more likely to be due to some other defect, as yet undiscovered.

Medical Societies.

MELBOURNE PÆDIATRIC SOCIETY.

A MEETING of the Melbourne Pædiatric Society was held on April 9, 1941, at the Children's Hospital, Melbourne. DR. H. L. STOKES, the President, in the chair.

Foreign Body in the Œsophagus.

DR. ROBERT SOUTHBY showed a male baby, aged eleven months, who had had pulmonary manifestations leading to the detection of a foreign body in the œsophagus. The baby had appeared for the first time at the out-patient department because at the age of seven months he weighed only eleven pounds ten ounces and was not thriving. The birth weight was seven pounds two ounces. He had been breast fed for three months and then on a sweetened cow's milk mixture and had made satisfactory progress for one month; the weight at the age of four months was eleven pounds ten ounces.

When first seen at the hospital the child was malnourished, but he was taking a suitable feeding mixture in adequate amounts, and special attention was being paid to added vitamins and minerals, including iron. Though he looked rather pale, the erythrocytes numbered 5,500,000 per cubic millimetre of blood and the hæmoglobin value was estimated at 90%. The leucocytes numbered 22,400 per cubic millimetre, 70% being lymphocytes; no abnormal erythrocytes or leucocytes were seen in a prepared film. On January 10, 1941, when he was aged eight months, the child had mild bronchitis with feverishness, vomiting, coughing and wheezing. He had gained only one and a half ounces in weight. On January 20 he had a smothering cough and was somewhat cyanotic, though afebrile. On February 17 he was very ill and weighed only eleven pounds six ounces; he was feverish and was admitted to hospital with the provisional diagnosis of bronchopneumonia. An X-ray examination was made, which revealed a metallic foreign body; this could be recognized as the shadow of the metal end-piece used to cover the point of a lead pencil. By means of a special film, exposed to show the outline of the œsophagus partially filled with radio-opaque gruel, the foreign body was located in the œsophagus. Subsequently Dr. Hennessy removed it and remarked that it had been there for a long time. Eleven days later the baby was discharged from hospital, and he had made satisfactory progress; the weight on March 31 was twelve pounds twelve ounces.

Dr. Southby said that young children, especially between the ages of one and four years, frequently swallowed foreign bodies, which might be anything that the child could reach and put in the mouth; still more frequently they were erroneously credited with having swallowed them. In most cases there was a clear history of the accident, but not invariably; the child might be alone at the time and too young to be able to inform the parent. Cough might be a symptom, and was usually caused by pressure on the tracheo-œsophageal wall or from the trickling of secretion into the larynx or trachea. Tracheo-bronchitis or bronchopneumonia might follow, and stridor and wheezing might be pronounced, though they might be absent sometimes when the child was asleep. Pain varied with the nature of the site of the foreign body. Symptoms referable to the œsophagus were often very few; interference with swallowing might be only slight or very severe. After the initial irritation in some cases the symptoms subsided almost entirely; but in others they persisted even after the foreign body had been removed or had passed into the stomach. If the obstruction was at all pronounced there was continual dribbling of saliva with excessive secretion into the oral cavity; this might lead to the formation of small cracks at the angles of the mouth and aversion to the intake of liquid or solid foods. Dr. Southby went on to say that other patients in similar circumstances might be able to swallow with ease; but the laryngeal symptoms might be so severe as to suggest that the foreign body was in the air passages. The narrowest portions of the œsophagus were where it commenced at the crico-pharyngeal fold opposite to the inlet to the thorax and at the level where it was crossed by the left bronchus. He said that the general systemic effects varied with the nature of the foreign body, the duration of impaction, the degree of obstruction and the local changes or reaction produced by it. There might be some feverishness and increase in pulse rate, accompanied by few and vague symptoms. The children were usually fretful when awake and restless when asleep, and were prone to loss of weight owing to insufficient intake of food. In conclusion Dr. Southby emphasized the importance of consideration of the symptoms he had mentioned as indicating the presence of a foreign body in the œsophagus, when a baby or young child who was not thriving had anomalous bronchial or pulmonary symptoms, and more especially if the onset was insidious and unexplained, the infant having previously been in good health.

Compensatory Bronchiectasis.

DR. HENRY SINN introduced a discussion on the subject of compensatory bronchiectasis by mentioning an article by Leonard Findlay, which had appeared in 1935 in *Archives of Disease in Childhood*; the article was on the subject of the diagnosis of collapse of the lower lobe of the lung leading to compensatory bronchiectasis. Dr. Sinn used a number of skiagrams of patients who had been under his care to illustrate his remarks and to establish the fact that the type of bronchiectasis under discussion could be differentiated clinically. He said that the lower lobe of the left lung was much more commonly affected by collapse than was the base of the right lung. He mentioned that though Dr. Leonard Findlay required the proof of collapse by demonstration of expansibility by dilatation, it was not usual to apply that test and it was not essential. The indication for investigating the possibility of compensatory bronchiectasis was the persistence of cough as a symptom after an attack of pneumonia. The radiological features leading to the establishment of the diagnosis were the following: (*a*) a triangular shadow behind that of the heart, (*b*) increased translucency of the upper portion of the heterolateral lung due to compensatory emphysema, (*c*) elevation of the heterolateral portion of the diaphragm, (*d*) displacement of the mediastinum towards the affected side, and (*e*) compensatory bronchiectasis in the collapsed lobe, revealed by radiological examination by means of the instillation of iodized oil.

DR. C. H. FITTS said that he was prepared to accept as correct the history of repeated attacks of pneumonia, which was often obtainable in the cases under discussion; infection and repeated infection were prone to occur in the triangular area of collapsed lung, though occasionally the physical signs of compressed lung might be misleading. He had a strong dislike of the "spill-over" theory often used to explain the spreading of bronchiectasis to other portions of the affected lung or to the lung of the opposite side; if spilling over was a real factor, it should be much more

common in cavitation with fibrosis and secondary infection. Dr. Fitts discussed the causation of the triangular area which was frequently discernible in the X-ray films, and spoke of the secondary effects of the loss of space following collapse. In conclusion he expressed his agreement with Dr. Sinn that Dr. Leonard Findlay's dogma that expansibility was an unnecessarily stringent *sine qua non* for the acceptance of the diagnosis.

DR. KEITH HALLAM said that the reason why the collapsed basal lobe did not always appear sufficiently clearly in X-ray films to be recognized was that the edge was apt to be superimposed on the cardiac outline; he added that lateral skiagrams should be taken, and then the feature could not possibly be missed. In some cases true atelectasis was present, and the recurrent attacks of pneumonia were evidences of recrudescences of infection in the affected area. He went on to say that a high negative pressure developed when a lobe collapsed, and the prognosis depended on the duration of the collapse as well as on the presence of true atelectasis, in which the lobe had never been expanded. In conclusion Dr. Hallam suggested that those who were interested in obtaining further information on the subject of enlargement of the air passages as a result of negative pressure in the thorax should consult the published works of Dr. G. S. Todd, of King Edward VII Sanatorium, Midhurst, Sussex, England.

DR. L. P. WAIT remarked that the patients under discussion were not particularly likely to die at an early age, though they had to be strong enough to overcome more hazards than the average person. He related briefly some of the clinical details of a patient upon whom an operation had been performed for the interlobar type of bronchiectasis. At the time of operation the patient was reasonably well, but he died a few days afterwards of generalized pneumonia; at autopsy there was no evidence of bronchiectasis elsewhere. Dr. Wait was in favour of operative treatment in selected cases and advocated early surgical interference, if possible in childhood. He pointed out that it should be recognized as a general rule that the subjects of bronchiectasis were cripples; yet no proper provision was made for them along the lines adopted for cripples in the various orthopædic categories. He expressed the opinion that if these patients were treated early and properly, satisfactory results might be obtained.

Dr. Sinn, in reply, thanked the members for the way in which they had received his remarks.

Familial Fragilitas Ossium.

DR. B. R. HALLOWS showed two girls, aged respectively fourteen years and five years, belonging to an interesting family, a number of the members of which were afflicted with *fragilitas ossium*. The outstanding feature of interest was the intensely blue colour of the sclerotics of the eyes of the two children. Dr. Hallows said that the older girl had had both upper and both lower limbs fractured and the younger one had had fractures of each lower limb; the mother at the age of thirty-nine years was at that time undergoing treatment for her thirty-ninth fracture; and of six children in the family, he knew that another child, a boy, aged six years, had had a fractured spine. Dr. Hallows went on to discuss some of the features of calcium and phosphorus metabolism and spoke of the way in which perversion of metabolism of those elements could be linked with the pathology of rarefaction of bones in *fragilitas ossium*. He also demonstrated from a series of skiagrams the main features of interest in the radiological study of the condition.

Diagnosis of Pulmonary Tuberculosis.

DR. REGINALD WEBSTER gave a short description and synopsis of the bacteriological investigation he was conducting in an attempt to establish the presence of tubercle bacilli in the secretions of persons under suspicion of having pulmonary tuberculosis because of anomalous radiological features. This work was described in a leading article in this journal on May 10, 1941.

DR. KEITH HALLAM said that the profession owed Dr. Webster a great debt of gratitude for the thorough and convincing way in which he was applying the acid test—the recovery of the organism—to the diagnosis suggested by radiological appearances; after all, the bacteriologist was the high chief justice in the court of inquiry, and the radiologist was apt to be guilty of perjury or contempt of court.

DR. H. L. STOKES, from the chair, expressed the appreciation of the members of the society of the high quality of the many communications Dr. Webster had made at the meetings, and of the inimitable manner in which he aroused their interest and pressed home with conviction the important lessons to be learned from scientific laboratory investigations.

Post-Graduate Work.

COURSE IN PRACTICAL PATHOLOGY AT SYDNEY.

THE New South Wales Post-Graduate Committee in Medicine announces that a course in practical pathology will be held from July 7 to August 11, 1941. The course is designed primarily for medical men practising or intending to practise pathology, and will be held at the new medical school of the University of Sydney, except where otherwise indicated, on the dates set out below. It will consist of lecture demonstrations, which will begin at 6.30 p.m., devoted to fundamental aspects of the technique and interpretation of laboratory tests.

Monday, July 7, Wednesday, July 9, Friday, July 11, Monday, July 14.—Bacteriology: Professor H. K. Ward. (Lectures and practical work will cover the preparation of ordinary and special media; the isolation, cultivation and identification of pathogenic bacteria from clinical material; serum reactions.)

Wednesday, July 16.—General biochemical technique: Dr. F. S. Hansman.

Friday, July 18.—Biochemical methods for diagnosis of renal damage: Dr. F. S. Hansman.

Monday, July 21.—The blood sugar estimation and significance: Dr. F. S. Hansman.

Wednesday, July 23.—Estimation of calcium, phosphorus, cholesterol and chlorides and the Van den Bergh reaction: Dr. F. S. Hansman.

Friday, July 25, Monday, July 28, Wednesday, July 30.—Hæmatology: Dr. A. H. Tebbutt.

Friday, August 1, Wednesday, August 6, Friday, August 8.—Morbid histology: Dr. F. B. Byrom. (Special attention will be paid to sources of error in the interpretation of histological preparations. If possible a demonstration of post-mortem technique will be given.)

Monday, August 11.—The detection of the animal parasites of man by fæcal examination: Dr. G. A. M. Heydon. (In the School of Public Health and Tropical Medicine.)

The fees (except for medical officers of the defence forces on full-time service, who are invited to attend the whole or any part of the course free of charge) are: Full course, £5 5s.; biochemistry only, £2 2s.; morbid anatomy and histology only, £2 2s.; hæmatology only, £2 2s.; bacteriology only, £2 2s.; protozoology and helminthology only, £1 1s.

Applications for registration, accompanied by a remittance for the amount of the fee, must be made to the Secretary, New South Wales Post-Graduate Committee in Medicine, the Prince Henry Hospital, Little Bay, New South Wales.

NOTICE.

THE New South Wales Post-Graduate Committee in Medicine announces that the next library seminar arranged by the Post-Graduate Directors of Medicine, Surgery and Pathology will be held at the Prince Henry Hospital, Little Bay, New South Wales, on Monday, June 9, 1941, at 4.30 o'clock p.m. The subjects will be: (*a*) blood phosphorus and phosphatase, (*b*) hypotension. A cordial invitation to be present is extended to all medical practitioners.

Correspondence.

BRITISH MEDICAL ASSOCIATION ASSISTANCE TO MEMBERS ON MILITARY SERVICE, BRISBANE.

SIR: While admiring the rhetorical vigour and adroit management that converted an enthusiastic "yea" for revision into a puzzled and tired "nay", I am convinced that the meeting of May 16 did little to assuage the dissatisfaction mentioned in Dr. Culpin's letter *re* the British Medical Association Assistance to Members on Service Scheme, Brisbane.

I do not believe that discontent is based on a desire to evade or diminish obligations by members. It is rather a general hostility engendered by a belief that some of the beneficiaries are very far from requiring financial assistance from colleagues harassed by savage taxation. It is a question of a desire for a more equitable distribution than the present flat rate, in which only the number of dependants is taken into account. It is felt that other considerations, such as the amount of military pay, the extent of private

means and the amount of commitments should be taken into account also.

The trustees appear to be in the first place reluctant to alter the scheme now that there are beneficiaries; but the possibility of future alteration was taken fully into account in the preliminary discussion and the rules of the scheme. Trustees also have a very natural objection to have to acquire knowledge of others' private affairs, especially as it was specifically promised in the first place that such disclosure should occur only minimally if at all. However, little more disclosure to the trustees need take place than at present. We have now to disclose our net income from practice to a trustee company, and if we find it necessary to appeal for relief from payments we have to make a more complete disclosure to one or more of the trustees themselves.

If members were required to disclose their total net income from all sources to the trustee company, then it would be simple for an allocation according to a prearranged schedule to be made. It would even be possible to allow certain deductions for inescapable commitments. A schedule could be drawn up in the direction of equalizing the income of beneficiaries, with due allowance for dependants. If the same amount of money were allocated, this would obviously increase benefits where most needed. Of course, right of direct appeal to the trustees with their discretionary powers would be available, although in this case disclosure to at least one trustee would be unavoidable.

Such a revision, I submit, would silence the malcontents, perhaps obviate some of the difficulty the trustees now experience in collecting dues promptly, and perhaps postpone indefinitely the breakdown in the scheme thought inevitable by some members.

Yours, etc.,

F. F. PINCUS.

Commercial Bank Chambers,
Wickham and Brunswick Streets,
Valley,
Brisbane.
May 19, 1941.

SOME MEDICAL ASPECTS OF CRIME.

SIR: I hesitate to inflict myself on you again—and this I hope will be my last letter.

Again Dr. Dark replies by attacking the credibility of witnesses—Lyons especially—whom he accuses of "sensationalism". Well, Gladstone was accused of sensationalism when he wrote to *The Times* on the Neapolitan prisoners, and the Neapolitan counter-attack was as weak as Dr. Dark's attack on Lyons.

I know the incident to which Dr. Dark refers quite well, and I wonder who he thinks comes out of it with less credit—a great government forcing unhappy correspondents to suppress information, or those same correspondents giving way to hold their job? Is it any wonder that such of those as Moggeridge and Lyons in their bitterness spoke very frankly once safe from the Stalinist machine. Moggeridge is an especially important witness, and Dr. Dark does not mention him; he represented *The Manchester Guardian* and went to Russia a sympathetic observer. "Winter in Moscow" was the result.

I am perfectly aware that the Dean of Canterbury is an engineer and an economist; neither makes him an entirely reliable observer, of the calibre, say, of Littlepage.

It may interest Dr. Dark that another Dean (Inge this time) has backed a book on the Russian prison system, which (I have only seen extracts) appears to make Chicherin's "I Speak for the Silent" very mild indeed. I refer to Ameel's "Red Hell", not yet obtainable here.

But to come back to the central issue. Dr. Dark produces a government statement as evidence that physical cruelty is not used in Stalinist prisons. I quoted certain positive evidence to the contrary. He disparages my witnesses and quotes certain people who, it would appear, did not encounter these features.

I reply that his disparagement of my witnesses does not greatly impress me, and that one piece of positive evidence is worth half a dozen negative. (Compare the diagnosis of tubercle or diabetes for instance.)

As to the infallibility of the Russian State religion, the best witness is André Gide, a more than sympathetic Communist.

One last witness I think I may quote—Dostoievsky. I doubt if in essential make-up the Russians of today are very different from the brothers Karamazov; probably not so well fed, however!

I hope this correspondence has been of value in directing the minds of some of your readers to what is to be the world's greatest problem—our future attitude to Soviet Russia. Of course, if Hitler wins we need not bother—Russia will become gradually but inevitably the servile State that Italy already is and France will shortly be.

Yours, etc.,

Craigston,
217, Wickham Terrace,
Brisbane.
May 23, 1941.

S. F. McDONALD.

FACTORS CONCERNING IMMUNITY AND REPAIR IN WOUNDS.

SIR: In view of the need to use every means to reduce to a minimum the complication of sepsis which affects war wounds, the following comments are tendered.

When a tissue is injured, resulting in a hæmatoma without breach of the skin, a serum can be extracted which greatly promotes the extent of the growth and morphological robustness of bacteria cultured therein—for example, streptococci. Serum extracted from a twenty-four or forty-eight hour old hæmatoma produces this effect when added to tryptic broth or blood agar plates as compared with controls. It appears that the inflammatory lysis, which is an essential antecedent to repair, promotes a process of autodigestion in the tissues affected, that is in effect analogous to that technically adopted in the addition of trypsin to the protein of a broth culture.

Such is a brief for the earliest possible sterilization of wounds before they become homologous culture media. This appears also to account in part for the high resistance of immobilized limbs, in that absolute rest entails optimum apposition of the histological elements of wounded tissues. This theoretically provides against repeated acts of lysis which are made necessary by new adjustments called forth by fortuitous movements.

A rule might be promulgated that bacterial fixation in wounds is, for lytic reasons, proportional to the time lost in sterilization.

In regard to the determination of protective leucocytes in wounds, globulin agencies used for promoting phagocytosis have proved in the writer's hands to lead on local use in wounds to a gross leucocytic exudate. This latter may be associated with a surrounding areola of hyperæmia and turgescence, suggesting that this agent should be diluted with normal saline before application. If an antitoxic serum with polyvalent properties, such as diphtheritic serum, be mixed with the globulin, the acute inflammatory reaction is lessened, but the phagocytic process is still active. These recommendations are advanced as of possible value in adjunctive treatment of wounds emerging from the present war. The method just described was first tested in intractable ulcers with heaped-up rims resulting from a mixed infection by hæmolytic types of both staphylococci and streptococci. Where these ulcers were confluent or were delayed in healing by the poor "sub-soil" over the tibia, healing did not occur until the above measures were adopted. The infection described was caused by multiple sand-fly bites, which were later further complicated by carelessness in washing a purulent eczema of a type regarded as incurable in dogs and for which the latter have always to be shot.

Yours, etc.,

96, Balaclava Road,
Caulfield, S.E.7,
Victoria.
May 25, 1941.

FRANK TRINCA.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*. Number 100, of May 22, 1941.

AUSTRALIAN IMPERIAL FORCE.

Australian Army Medical Corps.

The regimental seniority of Captain C. D. Donald is next after Captain S. W. Bryan.

To be Major-General.—Colonel (Temporary Brigadier) S. R. Burston, C.B.E., D.S.O., V.D., 16th February, 1941.

CASUALTIES.

ACCORDING to the casualty list received on May 30, 1941, Major A. W. L. Row, A.A.M.C., of Toowoomba, Queensland, has been removed from the dangerously ill list and placed on the seriously ill list.

New Medicaments, Apparatus, etc.

"SIMANITE."

"SIMANITE" is a preparation of silver manganite and is manufactured in Australia by Simanite (Australasia) Proprietary Limited. The manufacturers claim that it intensifies in a non-irritating, neutral and non-poisonous form the germicidal qualities of silver. They also state that, unlike other pharmaceutical compounds containing silver, "Simanite" is not rendered inactive by sulphur compounds and that it does not coagulate albumin. "Simanite" has been shown to have an inhibitory action on microorganisms cultured in the laboratory, but it is well known that the addition of chemical substances reputed to have an antiseptic action to the culture of a living organism may so alter the chemical reaction as to inhibit the growth of the organisms without exerting a direct effect upon their vitality. The greatest caution must therefore be used in the making of any claim on the basis of such laboratory findings alone for a bactericidal action for such substances. Clinical trial has, however, been made of "Simanite" in the treatment of septic ulcers, and a competent observer has assured us that the claims made for the substance by the manufacturers in this regard can be substantiated.

Nominations and Elections.

THE undermentioned has applied for election as a member of the New South Wales Branch of the British Medical Association:

Schlink, Franziska, M.B., B.S., 1932 (Univ. Melbourne), Broken Hill and District Hospital, Broken Hill.

MEDICAL WAR RELIEF FUND.

THE following is a sixth list of contributions to the Medical War Relief Fund established by the Federal Council of the British Medical Association in Australia for the relief of distressed medical practitioners in Great Britain.

Western Australia.

£10 10s.: Dr. J. L. Day.
£10: Dr. E. Byron.
£5 5s.: Dr. A. Juett and Dr. R. D. McKellar Hall, Dr. A. E. Cullen.
£5: Dr. F. A. Hadley.
£3 3s.: Dr. H. B. Gill, Dr. A. M. A. Clark, Dr. M. Kelly, Dr. J. H. Young.
£2: Dr. T. C. Boyd, Dr. J. E. McGlashan, Dr. C. Fortune, Dr. F. H. Ebell, Dr. G. R. Troup.
£1 1s.: Dr. H. G. D. Breidahl and Dr. D. Wilson (weekly contribution), Dr. C. Courtney, Dr. B. R. Ambrose, Dr. J. J. Holland, Dr. L. G. B. Cumpston.

Obituary.

ROBERT MEREDITH FARRELL.

WE regret to announce the death of Dr. Robert Meredith Farrell, which occurred on June 1, 1941, at Pymble, New South Wales.

WILLIAM ELPHINSTONE KAY.

WE regret to announce the death on active service of Colonel William Elphinstone Kay, of the Australian Army Medical Corps.

Books Received.

"Modern Treatment in General Practice, Year Book 1941", edited by C. P. G. Wakeley, C.B., D.Sc., F.R.C.S., F.R.S.E., F.A.C.S., F.R.A.C.S.; 1941. London: The Medical Press and Circular. Demy 8vo, pp. 341, with illustrations. Price: 12s. 6d. net.

Diary for the Month.

JUNE 10.—Tasmanian Branch, B.M.A.: Branch.
JUNE 10.—New South Wales Branch, B.M.A.: Executive and Finance Committee.
JUNE 12.—Victorian Branch, B.M.A.: Ethics Subcommittee.
JUNE 13.—Queensland Branch, B.M.A.: Council.
JUNE 16.—Victorian Branch, B.M.A.: Hospital Subcommittee.
JUNE 17.—Victorian Branch, B.M.A.: Organization Subcommittee.
JUNE 17.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.
JUNE 17.—New South Wales Branch, B.M.A.: Ethics Committee.
JUNE 18.—Western Australian Branch, B.M.A.: Branch.
JUNE 19.—New South Wales Branch, B.M.A.: Clinical.
JUNE 19.—Victorian Branch, B.M.A.: Executive.
JUNE 24.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JUNE 25.—Victorian Branch, B.M.A.: Council.
JUNE 26.—New South Wales Branch, B.M.A.: Branch.
JUNE 26.—South Australian Branch, B.M.A.: Branch.
JUNE 27.—Queensland Branch, B.M.A.: Council.
JUNE 27.—Tasmanian Branch, B.M.A.: Council.
JULY 1.—New South Wales Branch, B.M.A.: Council (Quarterly).
JULY 2.—Victorian Branch, B.M.A.: Branch.
JULY 2.—Western Australian Branch, B.M.A.: Council.
JULY 3.—South Australian Branch, B.M.A.: Council.
JULY 4.—Queensland Branch, B.M.A.: Branch (Ordinary).
JULY 4.—Victorian Branch, B.M.A.: Legislation Subcommittee.
JULY 8.—New South Wales Branch, B.M.A.: Executive and Finance Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

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